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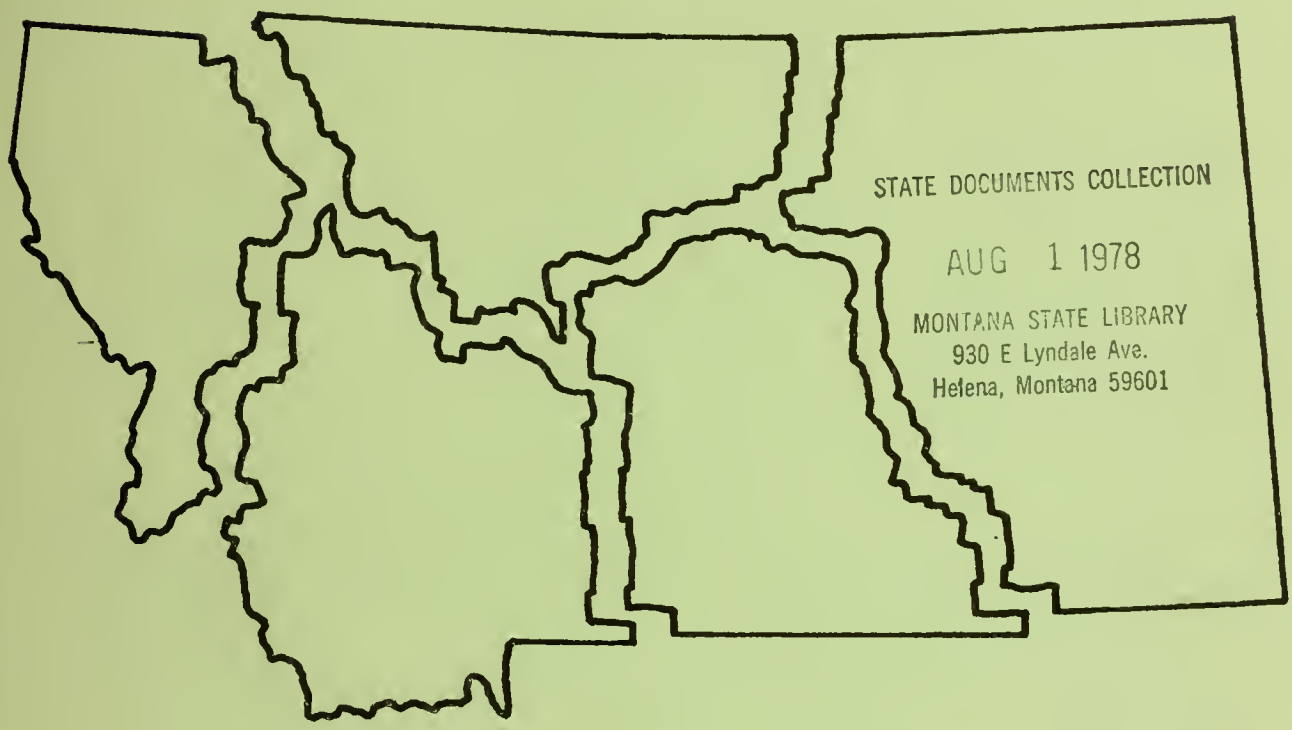

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Ralph Gildroy
Executive Director

February 3, 1978

PREFACE:

This initial Health Systems Plan which follows is a dynamic document resulting from extensive work by the Plan Development Committee under the able Chairmanship of Sharon Diezinger and dedicated staff under the guidance of Robert Liffring.

The Plan and its annual revisions furnishes the basis for wide consumer as well as provider involvement leading toward orderly, appropriate growth and, hopefully, serving the best interests of all the citizens of Montana. The full Governing Board has endorsed each component. Additional components will be added as well as revisions which are made to the present document.

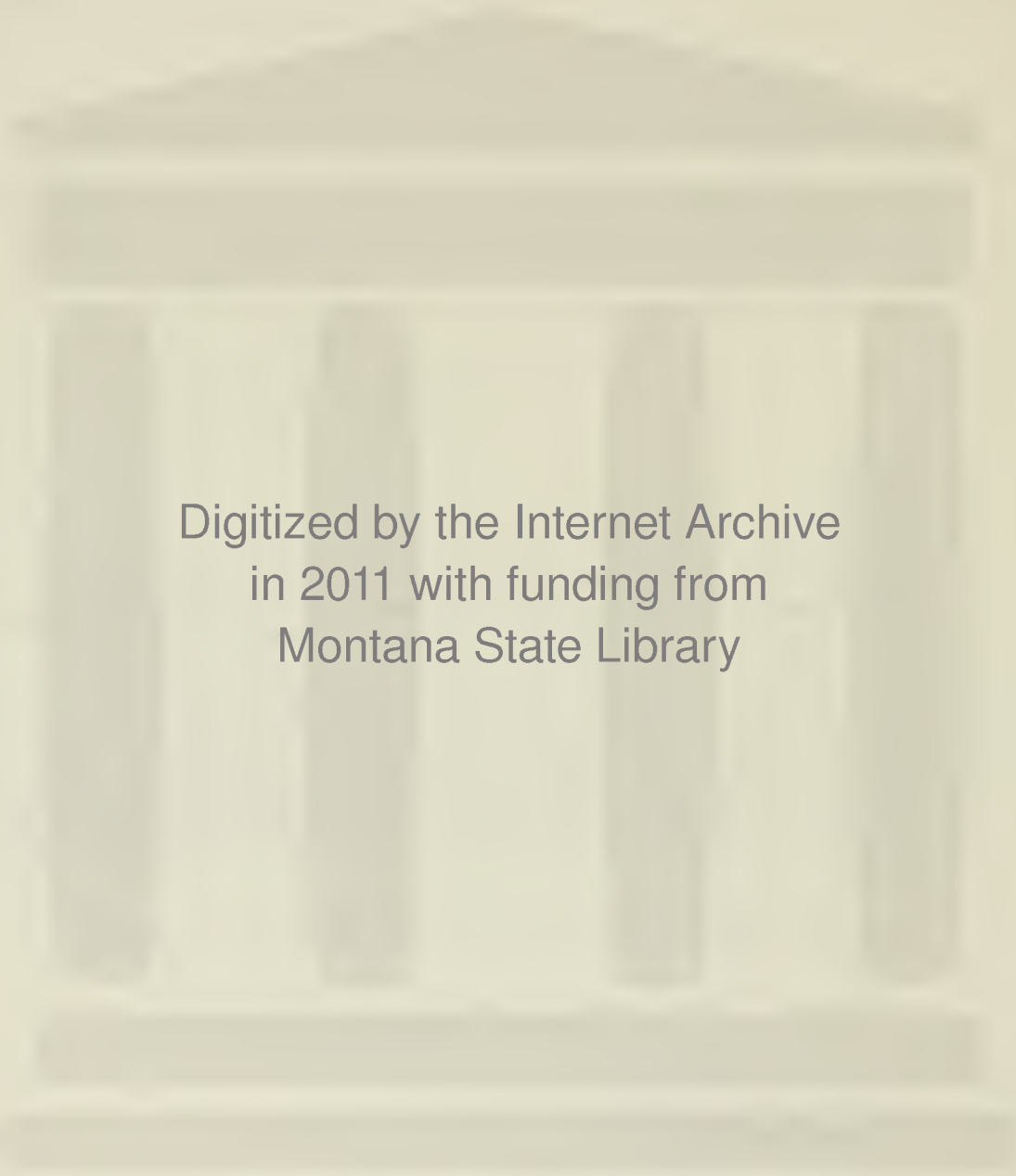
With continued efforts by all of us, we can be successful.

Bryce G. Hughett

Bryce G. Hughett, M.D.
Health Systems Agency Governing
Board Chairman

BGH/djt

Enclosure



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Department of Health and Environmental Sciences
STATE OF MONTANA HELENA, MONTANA 59601

A C Knight, M D., F C C P
Director

TO: The Citizens of Montana

The Montana State Department of Health and Environmental Sciences, through its Bureau of Health Planning and Resource Development, is pleased to have had the opportunity to cooperate with the Montana Health Systems Agency in the researching and writing of the components of the first Montana Health Systems Plan.

We trust this spirit of mutual cooperation will continue through the writing and publication of the Montana State Health Plan and the Montana State Medical Facilities Plan by the Bureau of Health Planning and Resource Development.

Sincerely,

A.C. Knight, M.D., F.C.C.P.
Director

MONTANA HEALTH SYSTEMS PLAN
1978

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# EXECUTIVE SUMMARY

This document represents the first effort of the Montana Health Systems Agency to develop a Health Systems Plan (HSP) for the state. Initial emphasis has been placed upon developing guidelines to support decisions on the future expansion of medical facilities and highly specialized medical services.

During its first year of operation, the agency undertook the responsibility of conducting reviews under 1122 of the Social Security Act and Montana's Certificate of Need Law. It became immediately apparent that existing guidelines for the services subject to review badly needed updating. As a result of this recognition, it was decided that a planning model which focused on these services was to be used. This is the so called, "Pyramid Model" which is explained in detail in Chapter 2.

Guidelines for fifteen services have been prepared during this first year. These include:

- Clinical Cardiovascular Laboratories & Cardiac Surgery Facilities
- Radiation Therapy & Other Oncology Services
- Neonatal Intensive Care Units
- End Stage Renal Disease
- Computerized Tomography (CT) Scanners
- Burn Care
- Poison Control
- Blood Banking & Processing
- General Hospital Acute Inpatient Services
- Critical Care (ICU & CCU) Beds
- General Hospital Psychiatric Beds
- Clinical Laboratory Services
- Diagnostic Imaging
- Long Term Care Facilities
- Home Health Care

The first eight are classified as tertiary care or regional services and are characterized as affecting a relatively small percentage of the population, being highly technical and very expensive. The guidelines for these services are found in Chapter 3.

The latter seven guidelines deal with secondary services. These services are used more frequently by the population, are found in most larger communities and usually require substantial capital investment to initiate. The guidelines for these services are presented in Chapter 4.

To summarize the recommendations in the components, Table 1 compares the current status in Montana with the levels being called for in the Health Systems Plan in 1985. It appears that most of the tertiary services have been rationally developed in Montana and will be sufficient to meet the needs of Montanans in the next eight years. Although there currently appears to be a surplus of hospital beds, it is expected that population growth during the next eight years will eliminate most of the excess. By 1981, it is expected that Montana will have less than 4.0 acute care hospital beds per 1,000 population if the plan is followed. It should be noted, however, that Montana hospitals will not achieve an annual average occupancy of 80%. Even with severe reductions in bed capacity, this figure cannot be achieved. The primary reason for this is the overwhelming number of small hospitals in the state (43 of 61 community hospitals are licensed for less than 50 beds). These hospitals need a greater percentage of unused available beds to handle day to day fluctuations and emergency situations.

Also small hospitals are necessary to attract and hold physicians. It should be noted that even with very low occupancy rates, the cost per patient per day in these small hospitals is less that in larger, high occupancy hospitals.

Health planning in rural areas like Montana precludes many of the alternatives that are available in other areas of the country. Time-distance problems, local attitudes and facility size; to name a few, do not allow the application of many national guidelines. Local needs must be incorporated into the health planning process and adjustments must be possible as the people of Montana see fit to make them. Affecting the viability of small hospitals in Montana does more than impact the health care system, it often impacts the life style of a community. Economic consideration of hospital closure, as presented in Appendix 3 indicate economic savings themselves may not be as substantial as have often been suggested.

| SERVICE | CURRENT STATUS IN MONTANA | EXPECTED 1985 STATUS IN MONTANA (BASED ON PLAN COMPONENT) |
|---|---|---|
| General Hospital Beds | 4.2 Beds/1,000 population (excluding special care beds)<br><br>4.6 Beds/1,000 Population (including special care beds) | (ALL ESTIMATES ASSUME SPECIAL CARE BEDS ARE EXCLUDED)<br>- 3.66 Beds/1,000 population if no hospital beds were added or decreased<br>- 3.85 Beds/1,000 population if areas where 1) increases are recognized and are built and, 2) beds in other areas are not decreased<br>- 3.19 if the planned needs were fully complied with |
| | Annual Average Occupancy 55.2% - (excluding special care beds) | (ALL ESTIMATES ASSUME SPECIAL CARE BEDS ARE EXCLUDED)<br>- 64.7% if no hospital beds were added or decreased<br>- 62.0% if areas where 1) increases are recognized and are built and, 2) beds in other areas are not decreased<br>- 74.8% if planned needs were fully complied with |
| Long Term Care Beds | 67.4 Beds/1,000 persons aged 65 | - Overall goal of 70 Beds/1,000 elderly<br>- Planned need 69.6 Beds/1,000 elderly |
| ome Health Care | Agency case loads vary from a low of 7 patients to a high of 367 patients | Each agency should have a minimum active case load of 110 patients/year |
| Clinical Cardiovascular (Cardiac Catheterization) Laboratories | # Procedures (1976)<br>Billings Deaconess (Billings) 409<br>St. Patricks (Missoula) 382<br>Montana Deaconess (Gr. Falls) 111 | - Plan recommends 300 procedures per year as a minimum, 450/yr. to break even<br>- No new facilities are to be approved unless need can be demonstrated<br>- Cardiac cath. and open heart surgery should be in the same facility |
| Open Heart Surgery Facilities | # Procedures (1976)<br>Billings 176<br>Missoula 94<br>Great Falls 0<br>(98 sent from Great Falls to Spokane) | - Plan specifies 100-150 operations/yr<br>- Plan provides for open heart unit in Great Falls<br>No other units unless need can be shown |

TABLE 1 - Summary Comparison Between the Current Status and Future Goal Levels in the Health System Plan for Selected Services. (Continued)

| SERVICE | CURRENT STATUS IN MONTANA | EXPECTED 1985 STATUS IN MONTANA (BASED ON PLAN COMPONENT) |
|---|---|---|
| Radiation Therapy Units | 1 linear acceleration and 7 cobalt 60 machines = 1 unit/93,600 population | - Plan indicates four megavoltage units are needed - 1 in each subarea except Eastern<br>- Plan recommends each unit serve a base population of 150,000 persons, or a radius of at least 150 miles |
| Neonatal Intensive Care Units (NICU) | 57 Beds in 4 units | 87 beds in 6 units |
| End Stage Renal Disease (ESRD) | No kidney transplant capability in Montana<br>Utilization: Patients / % Use<br>St. Patrick 3 50%<br>St. Peters 4 38%<br>Bil. Deaconess 14 70%<br>Columbus 12 100%<br>33 | - If possible, emphasize home dialysis<br>- By 1985, 50 new ESRD patients will require 25 ESRD stations (13 more than Montana currently has) |
| Computerized Tomographic (CT) Scanners | Procedures/yr<br>Billings 840 (est.)<br>Gr. Falls Not operational<br>Missoula Not operational | - No more than 3 scanners in Montana until utilization levels indicate a need for more<br>- Only Great Falls area is projected to have more than 2,000 scans/yr. |

TABLE 1 - Summary Comparison Between the Current Status and Future Goal Levels in the Health System Plan for Selected Services. (Concluded)

In the time that was available to develop the first health systems plan, many important components of the health care delivery system could not be addressed. These include primary care, emergency medical services, alcoholism, drug abuse, mental health programs, and other government sponsored health initiatives. Likewise, the subject of health manpower is not addressed in the first year's plan. Each of these services will be included in future updated versions of the Health Systems Plan.

The initial service goals of this Health Systems Plan are presented in Chapter 5. These are based upon a combination of staff analyses, community discussions at Subarea Advisory Council meetings and the service guidelines addressed in the plan. The service goals present alternative areas for health planning in Montana. In general, they address six of the ten priority areas delineated in Section 1502 of Public Law 93-641. These areas are:

- Primary Care for Underserved Populations
- Coordination of Services
- Sharing of Support Services
- Health Services Quality Improvement
- Geographically Integrated Health Service Institutions
- Education of the General Public

Health Status Indicators are addressed in Health Service Goals, 5.5 and Appendix 2. The Health Service Goals are at least in part based on these indicators. Health Status indicators in Appendix 2 provide a historical as well as an up-to-date picture of birth and mortality (and morbidity) in Montana. In addition, most of the service guidelines (Chapters 3 & 4) present a section on incidence, morbidity and mortality trends dealing with the service being addressed.

# CHAPTER 1

# INTRODUCTION

## 1.0 PURPOSE AND USE OF THE HEALTH SYSTEMS PLAN (HSP)

The express purpose of this plan is to promote the development of the most effective supply, distribution and organization of health facilities and services within Montana. Specifically, it will be used:

(1) To guide the Health Systems Agency (HSA) in:

- identifying high priority health care areas in need of special, in-depth studies
- conducting project review activities for grant applications; capital expenditure proposals (section 1122 of the Social Security Amendments); and local, state or federal plans or policies affecting the health care delivery system in Montana; and
- formulating positions on health or health related issues of concern to the residents of Montana.

(2) To inform the appropriate public, private and non-profit health care providers about the health care needs evident in Montana and the priorities of the HSA in order to:

- enable health care providers to better make informed and rational decisions in allocating their resources; and
- encourage the implementation of program development activities addressing identified problems.

(3) To inform local, state, regional, and national government entities about the health care needs evident in Montana and the priorities of the HSA in order to:

- assist governmental entities in making informed and rational decisions in allocating health care resources in Montana.

(4) To inform community residents about the health care needs evident in Montana and the priorities of the HSA in order to:

- promote public involvement in health care planning; and,
- increase public awareness on the health care delivery system.

## 1.1 SCOPE AND LIMITATIONS

In its first year of operation, the Montana Health Systems Agency concentrated on developing a plan which would support project review activities. It was felt that the strongest tool the HSA

currently possesses to stimulate desired changes in the health care delivery system is its review and comment authority on proposed major capital expenditures for health care delivery. Throughout the guidelines, a concerted effort was made to strike a balance between costs, accessibility and quality. The components are oriented toward minimizing duplication and restricting excess capacity of institutional services. Because of the lack of reliable data, especially cost information and patient origin studies, the development of more specific recommendations was hampered. Many major health care issues remain to be addressed including primary care services, manpower problems and those preventive and support programs which must be designed to improve the health status and quality of life of Montanans. Because the Health Systems Plan is viewed as a continually expanding document, these concerns will be addressed in future versions of the plan.

## 1.2 METHODOLOGY

The Health Systems Plan is developed from a systems approach to planning, emphasizing services. Because this approach was used, the various sections, or components, were written and reviewed in modules. A schematic diagram of the process through which each component flowed is presented in Appendix 4.

Montana is a single health service area and is served by a single Health Systems Agency. To minimize duplication, the Health Systems Plan was developed by the Montana Health Systems Agency (HSA) with assistance from the State Health Planning and Development Agency (SHPDA) within the Montana State Department of Health & Environmental Sciences. Staff members of both agencies prepared initial drafts of the components. They worked with individuals, and also, informal committees from the Montana Medical Association, Montana Hospital Association, and Montana Nursing Home Association in the writing of the initial draft. Additional input was invited. Once prepared, the draft was circulated to these and other interested parties for review, criticism and additional input. Members of both staffs also reviewed the document before it was revised and disseminated for public comment.

After being revised, the public hearings, in each of the five subareas, were scheduled to obtain additional input and comments. The members of the subarea councils were given 45 days notice to prepare for the hearing. Public notices were also released at least 30 days prior to the hearing. At the same time, copies of the drafts were sent to all organizations, institutions and individuals who could be identified as being affected by the plan. Written comments were also solicited.

Approximately 30 days after the public hearing, the HSA Plan Development Committee met to review the comments and to instruct the staffs on changes in the draft. The staff member responsible then incorporated these changes into the draft. If the compon-

ent was considered controversial it was resubmitted to the HSA Plan Development Committee before being sent to the HSA Governing Board for approval and incorporation into the Plan. At quarterly meetings, the HSA Governing Board considered each component, and, if acceptable, approved it as part of the Health Systems Plan.

Prior to overall adoption, the entire Health Systems Plan was reviewed and discussed in a final, state-wide hearing. The comments from this hearing were again submitted to the HSA Plan Development Committee and forwarded with recommended changes, to the HSA Governing Board for final approval.

CHAPTER 2

# HEALTH CARE DELIVERY SYSTEM MODEL

## 2.0 HEALTH SYSTEM OVERVIEW

To provide an overview and a reference point for health plan development, it is necessary to first develop a model depicting the current health care delivery system. The model should address the goals and objectives of the Health Systems Agency and should include the following:

- A reflection of service orientation since P.L. 93-641 specifically addresses the necessity to plan for health services. HSA project review requirements, as outlined in Section 1122 of Title XI of the Social Security Act as amended (Section 221 of P.L. 92-603) and P.L. 93-641, also necessitate that the model reflect a service orientation.

- The provision of a systems approach which illustrates a method for integrating and coordinating the required resources to deliver health services and programs.

- A basis for describing the Health Care System as contrasted with the Medical Care System (generally considered the illness and treatment portion of the Health Care System.)

- An incorporation of the following types of services:
  - -health promotion and protection
  - -prevention and detection
  - -diagnosis and treatment
  - -habilitation and rehabilitation
  - -maintenance and support services

- A reflection of a regional approach toward planning to insure the delivery of a full spectrum of health services to a defined population. In order to use specific services optimally within a region, the regional approach toward planning will have to balance the issues of cost, availability, accessibility, continuity, acceptability and quality.

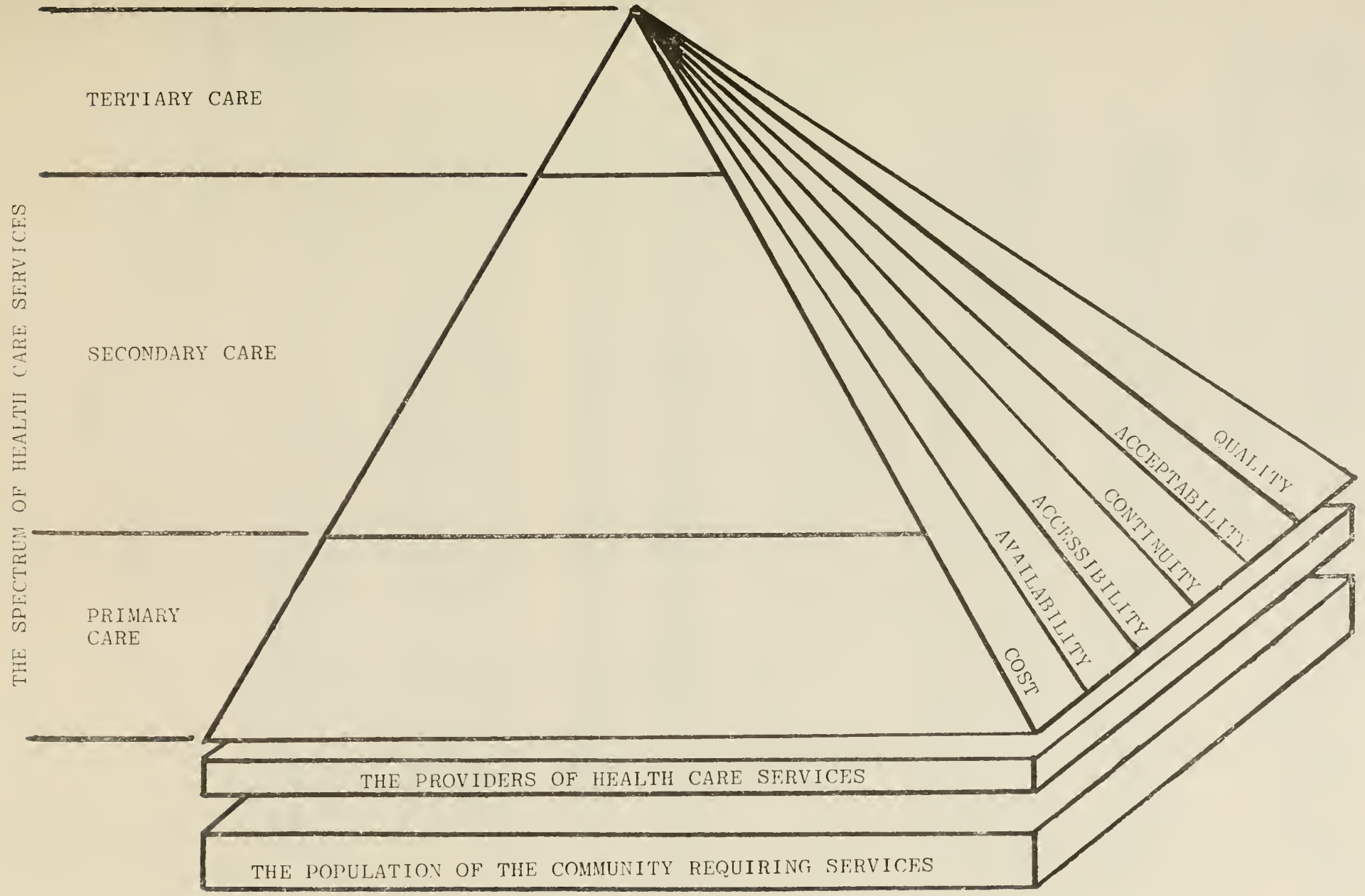
- An analysis of the system that is understandable to both the consumers and the providers. Rational community participation is required in the planning process in order to establish goals and objectives as well as in making the final Health Systems Plan decisions.

## 2.1 THE COMMUNITY HEALTH CARE SYSTEM MODEL

A model which satisfies all of the above specifications is the community health care system model. The model is visually displayed in Figure 1 as a pyramid. It represents all of the health services that are available to serve the population of the planning

FIGURE 1

THE COMMUNITY HEALTH CARE SYSTEM MODEL



area. The face of the pyramid represents the spectrum of health services as illustrated on the left. Special services are shown toward the top of the pyramid to illustrate that fewer services are required to serve the base planning population. The right side of the pyramid is divided vertically to illustrate six primary factors; cost, availability accessibility, continuity, acceptability and quality.

The planning population is shown at the base of the pyramid. Usually the population enters the health service system at the bottom of the pyramid or through a primary care provider. Ideally, people take active responsibility for their own well-being and health maintenance and, for the most part, stay out of the medical care system. If they require medical care services, they should seek these services beginning at the primary level and progress, through providers, up through the three levels of care (primary, secondary, and tertiary.) The type, amount, and organization of the health care resources depend upon the interaction between the levels of care, the other components, and the patient flow.

In the following paragraphs, those health care services and components common to all health services will be addressed. These include:

- The spectrum of services as shown on the face of the pyramid.
- The criteria considered for the provision of the service.

## 2.2 THE SPECTRUM OF HEALTH CARE SERVICES

Using the pyramid presented in Figure 1 as a reference, the organization of the spectrum of health care services will be described. Health care services are divided into four levels of care; Pre-medical care, primary care, secondary care, and tertiary care. Each level of care represents a different range and complexity of services. The organization of manpower, equipment, and facilities varies at each level.

- Pre-Medical Care

  Pre-Medical care services include measures taken to improve the environment in order to preserve healthful conditions as well as measures taken by individuals to improve and maintain their own levels of well-being. The environmental components include public services such as air pollution control, basic sanitation measures, water pollution control, solid waste and social services. The personal measures comprise those actions taken by individuals to improve or maintain their levels of health. Personal measures include stress control, weight control, exercise, nutrition, and personal safety actions. Ideally, it is in the pre-medical care level of the health system that individuals should strive to stay. Individuals enter the next level of care when seeking preventive medical services, such as immunization, or when they become ill and require medical attention.

- Primary Care

It is at the primary care level that patients should enter the health care delivery system. Primary care focuses on ambulatory care and those services which require a high frequency of utilization, such as routine preventive care, diagnosis and treatment of minor physical and mental illnesses, patient education, management of chronic conditions, routine dental care, and certain rehabilitative services.

General practitioners, internists, pediatricians, and obstetricians usually administer primary medical care services. These services are also provided by other health professionals through public health departments, county clinics, hospital emergency rooms, community health centers, group practices, optometrists, dentists, voluntary health agencies, school health programs, selected health care agencies, outpatient rehabilitation centers, etc. Primary care services should be available as close as possible to the consumer's home.

- Secondary Care

Secondary care can be viewed as the middle ground both in terms of medical treatment and in frequency of patient utilization. Secondary care services require a greater population than primary care services to justify their development since they are utilized less frequently by the general population and usually require substantial capital investment. Even though the services are fewer in number, they will always be found within the health service area.

Individuals requiring this level of care generally have health problems serious or complex enough to require a visit to a specialist and/or a health facility (i.e., a general hospital or nursing home).

The community hospital serves as the major facility for secondary care. The community hospital provides trained personnel, special diagnostic equipment, and inpatient services. Hospital services typically provided at the secondary care level include inpatient services for general surgery, medical treatment, and psychiatric diagnosis and treatment. Diagnostic procedures, therapeutic services, rehabilitative therapies and organized emergency care are provided through organized emergency care. Personal care, skilled and intermediate care, and boarding comprise the spectrum of long-term care services. The secondary level of care may also include those services generally described as residential care, day care, mobile meals, and rehabilitation. Other services which fall in this category are mental health, mental retardation and developmental disabilities, substance abuse and emergency medical services.

- Tertiary Care

Tertiary care services are those special services that because of complexity, cost, and/or relatively low levels of utilization are planned to be located within a large catchment area. In some cases, these services may not be located in a health service area either because the area is too small or because the service is too specialized. The tertiary level services represent a continuum of preventive, diagnostic, treatment and rehabilitative services for the acutely ill patient, as well as specialized services for patients with chronic, complicated and catastrophic illnesses. Tertiary care includes highly sophisticated diagnostic and therapeutic procedures such as complex surgical and diagnostic procedures, radiation therapy; renal dialysis, and major hospital trauma emergency department services.

Tertiary care services are typically provided in large referral hospitals.

Patients are usually directed to highly specialized services either because the disease or illness is difficult to diagnose or is rare in occurrence, or because the personnel and technical resources available to treat the disease process are relatively scarce and/or expensive.

Although the four levels of care appear to exist as discreet and seperate medical entities, many of the characteristics of each are closely related to the others. Together the four levels of care comprise a complete set of services necessary for the delivery of comprehensive health care. The spectrum of services depicted in the pyramid, Figure 1, is used only as an example.

The four levels of care have three characteristics which describe the organization of health services. The first characteristic is functional, i.e., the levels of care provide a method through which services can be catalogued and described by the type of service, by the area, or by the patient utilization patterns. Secondly, the levels of care apply to the planning process as they can be placed in a practical framework for the purpose of description, measurement, and analysis. Thirdly, the levels of care describe general characteristics of the integral parts of the system. The levels of care are useful in describing and tracing the process by which patients are referred through the system.

## 2.3 CRITERIA CONSIDERED FOR PROVISION OF SERVICE

The framework adopted to depict the conceptual description of the health care system includes the levels of care, the patient entry and referral component, and the factors which have to be considered to provide the service. This third dimension of the health care system model is graphically shown on the right-hand side of Figure 1.

The factors for which criteria and standards must be developed include:

- cost
- availability
- accessibility
- continuity
- acceptability, and
- quality

Cost

This element represents two types of costs:

1. The costs required to develop new services (i.e., the initial investment for facilities, equipment, and start-up costs) and,

2. The costs associated with the ongoing operation of the service.

A key factor to consider here is that the xource of financing for both capital and operations has been gradually shifting from the consumer, insurance company, and state and local government sources toward the federal government.

The expectations concerning impact results under P.L. 93-641 are high in areas such as controlling rising costs and removing financial barriers to care. The major toole the MHSA can use to influence these factors is its impact on the capital expenditure sector of the financial resource at the tertiary and secondary service levels. The immediate planning responsibilities of the MHSA, with respect to financial resources, are oriented toward preparing a plan which will allow for the review and comment of capital expenditures for facilities and equipment by institutions.

Availability

A goal of the MHSA is to facilitate an increase in the health services offered to populations now residing in medically underserved areas. Inequitable resource distributions and inaccessibility to health care resources are particularly evident in rural areas. General socio-economic conditions in rural areas also contribute to and compound the inadequacy of health care resources for rural health care delivery.

Accessibility

Rural areas have fewer primary care physicians than urban areas, fewer services available, and rural residents must travel greater distances to gain access to health care. In addition, widely dispersed populations, and communities that are not well organized or represented create a situation in which rural areas are less able to plan and compete for medical resources and services.

Continuity

Health services should follow a logical progression from detection, through diagnosis and treatment, to follow-up. Screening programs should be set up so that if a suspected illness is spotted, it can be diagnosed and treated. Medical specialists should strive to keep the primary physician informed on the patient's progress. Persons with chronic diseases should be followed after the initial treatment is given and the initial episode of disease overcome. All of these are aspects of continuity.

Acceptability

Patient satisfaction is considered for several reasons. First, patients provide the social mandate for the very existence of health care. Second, consideration of patient satisfaction preserves the humane character of health care (caring) along with the biomedical and scientific features (curing). Finally, patients are active participants in promoting or retarding the healing process. The ultimate success of many health care interventions is dependent upon the cooperation of the patient. Patient cooperation, in turn, is dependent to some degree on the level of the patient's satisfaction and the value he or she perceives in the care.

Quality

It is the shared responsibility of health care professionals and the government to provide a reasonable basis of confidence that action will be taken to both assess whether the services meet professionally recognized standards and to correct any deficiencies that may be found. Thus, quality assurance is not a guarantee of performance, much less of satisfactory results, but an iterative process that leads to improved health care quality. The quality assurance process consists of the following steps:

1. developing and disseminating knowledge regarding the effectiveness, safety and cost of medical procedures,

2. developing and disseminating knowledge regarding methods of assessing and improving the quality of health care interventions, and,

3. establishing organizational and administrative entities that can utilize the information from steps 1 and 2 to assess and, through a variety of mechanisms, improve the quality of performance, and which can contribute to the development of new information.

Quality assurance activities are needed because existing patterns of medical practice do not always produce the best achievable health outcome. "Achievable" is used here to mean that which can be accomplished for a particular patient's specific condition

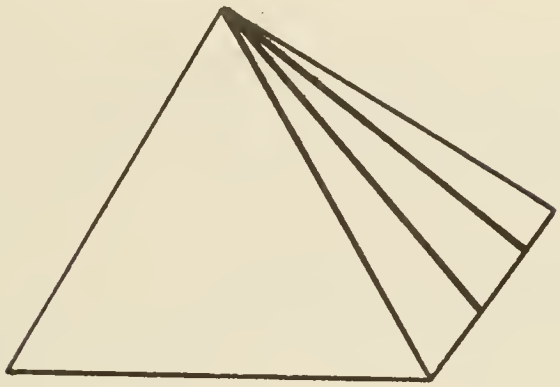
...ch currently available preventive, diagnostic and therapeutic modalities. When desired and attainable outcomes are not attained, the shortcoming is usually attributable to deficiencies in medical knowledge and/or deficiencies in the application of that knowledge.

The need to develop formal programs for monitoring the quality of health care services at all levels of care is recognized by virtually every professional and consumer organization as a necessary component in the delivery of acceptable medical services. Presently, there is no common program that applies accepted standards of quality of all elements of the health care systems.

Professional Standards Review Organizations (PSRO's) are being established throughout the United States to exercise some form of control over the delivery of health services. Federal law requires that the scope of review activities cover the monitoring of in-patient care for federally funded patients. The HSA will have to rely on the PSRO to develop and monitor this component of the health service systems.

# CHAPTER 3

## TERTIARY/REGIONAL SERVICES



Tertiary care services are those special services that, because of complexity, cost, and/or relatively low levels of utilization, are planned to be located within a large catchment area.

For these reasons, tertiary care services are typically provided in large referral hospitals and planned on a regional basis.

In this plan, eight tertiary care services are addressed. They are:

- Clinical Cardiovascular Laboratories and Cardiac Surgery Facilities
- Radiation Therapy and Other Oncology Services
- Neonatal Intensive Care Units
- End Stage Renal Disease
- Burn Care
- Poison Control
- Blood Banking and Processing
- Computerized Tomography (CT) Scanners

## CLINICAL CARDIOVASCULAR LABORATORIES AND CARDIAC SURGERY FACILITIES

### GOALS, OBJECTIVES AND RECOMMENDATIONS

The goal of these guidelines is to insure that facilities offering cardiac diagnostic and surgical services achieve and maintain a high level of expertise and to systematically encourage the development of new services only when sufficient volume can be expected.

In concert with these goals the following objectives and recommendations are suggested:

1) The institutions in Montana offering cardiac surgery and related diagnostic services should continue to improve their respective programs.

2) The Montana Deaconess Medical Center in Great Falls already has a cardiac catheterization program and should consider developing a cardiac surgery service.

3) Until there is an increased need, no other facilities in Montana should develop this service, unless there is a demonstrated deficiency in quality or service in these present programs; or assurance of better quality or service in the proposed new program; or the average cost of the service is not comparable with other referral areas. Consultation from cardio-thoracic national societies must be utilized to demonstrate such deficiencies or assurances of increased quality and service.

# CLINICAL CARDIOVASCULAR LABORATORIES AND CARDIAC SURGERY FACILITIES

## 1.0 Service Description

### 1.1 Definition

In recent years, surgical techniques have been developed to treat selected heart conditions. These can be classified into three groups: closed heart surgery, open heart surgery and coronary artery surgery. In closed heart surgery, a small incision is made in the heart and repairs are made without direct vision of the area. In open heart surgery, the incision is of sufficient size to allow repairs to be made with direct vision. Coronary artery surgery is used to re-establish adequate blood flow to the sections of the heart. Many of these operations require the use of a cardio-pulmonary bypass (heart-lung) machine in which the heart is stopped and blood flow is diverted around it.

Some of the heart conditions which currently are amenable to surgical intervention are disabling angina pectoris which is unresponsive to other medical treatment, acquired valvular disease or aneurysms and congenital heart disease. In some cases, surgery is also used to treat preinfarction angina and uncontrollable ventricular arrhythemia.[1] A detailed list of cardiac disorders in which surgical management can be employed is contained in the latest Inter-Society Commission for Heart Disease Resources' guidelines for cardiac surgery.[2]

Before the patient undergoes surgery, however, he is given a number of diagnostic tests. These include chest x-ray, electocardiogram, standard clinical laboratory examinations and exercise stress tests. Most candidates for cardiovascular surgery also have a cardiac catheterization performed. In these tests, a small tube (catheter) is passed through a vein in the arm, leg or neck into the heart. This permits differential pressures within the heart and aortic artery to be measured. Blood gasses are measured at various points throughout the procedure to provide information on possible lesions and heart efficiency. Contrast media may also be injected through the catheter to outline the shape of major veins and arteries and to further check the action of the cardiac valves.[3]

Cardiac catherizations should be performed in a clinical cardiovascular laboratory. To allow for procedural efficiency and patient safety, the laboratory should have a procedure room, a control room, an equipment room and areas for supporting facilities.[4]

### 1.2 Geographical Area

The geographical area for which these guidelines are being developed is the entire state of Montana. Where possible, the capability of resources in each of the five subareas will be addressed.

## 2.0 Background Trends

### 2.1 Incidence, Prevalence and Mortality

Heart disease is the most frequent cause of death in Montana and the nation. Crude annual mortality rates for Montana covering the five-year period between 1970-1975 are shown in Table 1. The 1975 rate is somewhat lower than those in the previous years,[5] it appears that the rate may be decreasing slightly in recent years.

With respect to prevalence, the National Center for Health Statistics has estimated that during the period between 1960 and 1962, 4.1 percent of the adult population had definite coronary, rheumatic or congenital heart disease. Another 2.2 percent had suspected coronary heart disease.[6] The prevalence of heart disease rises sharply with respect to age. There is no reason to believe that today's statistics would be significantly different.

### 2.2 Service Trends

Five changes may take place in the next ten years which may alter the demand for clinical cardiovascular laboratories and cardiac surgical facilities.[7] These include:

- More elective surgery for the relief of angina. The clinical success and reasonably low mortality rates of coronary artery surgery have created a significantly large surgical work load since its introduction in 1969. In the future, more heart disease patients with less pronounced disabilities may be treated surgically.

- New surgical procedures for specific conditions may become established as part of an accepted medical practice. Major changes in the surgical case load due to the adoption of these procedures is not anticipated.

- Control of Rheumatic Fever would reduce valvular heart damage and thus the need for valve replacement.

- Cardiac support procedures and temporary cardiac devices may be proven of value in the management of the poor-risk surgical patient and the patient in cardiogenic shock. The major application of these procedures will probably occur in the intensive and coronary care units, but the cardiac surgeon will be intimately involved.

- The use of emergency surgical procedures for patients with coronary artery disease may be more frequent. There have been some encouraging early results in this area but most physicians agree that it is too early to predict long term potency rates.

| ICDA CODE | CAUSE OF DEATH | 1970 a) No. | 1970 b) Rate | 1971 No. | 1971 Rate | 1972 No. | 1972 Rate | 1973 No. | 1973 Rate | 1974 No. | 1974 Rate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 393-398 | Chronic Rheumatic Heart Disease | 43 | 6.9 | 65 | 9.2 | 60 | 8.3 | 77 | 10.7 | 50 | 6.8 |
| 410-414 | Ischemic Heart Disease | 1,898 | 273.3 | 2,013 | 283.5 | 1,942 | 270.0 | 1,935 | 269.1 | 1,857 | 252.7 |
| 420-429 | Other Forms of Heart Disease | 244 | 35.1 | 223 | 31.4 | 258 | 35.9 | 254 | 35.2 | 262 | 35.6 |
| 440-448 | Disease of Arteries, Arterioles & Capillaries | 255 | 36.7 | 257 | 36.2 | 280 | 38.9 | 282 | 39.1 | 270 | 36.7 |
| 440 | - Arteriosclerosis | 162 | 23.3 | 156 | 22.0 | 172 | 23.9 | 167 | 23.2 | 169 | 23.0 |
| 441 | - Aortic Aneurysm (Noncysphilitic) | 37 | 5.3 | 47 | 6.2 | 54 | 7.5 | 63 | 8.7 | 57 | 7.8 |
| | TOTAL | 2,445 | 352.1 | 2,558 | 360.3 | 2504 | 353.3 | 2,548 | 353.4 | 2,439 | 331.8 |

(ref.15)

a) Source: State Department of Health and Environmental Sciences, Montana Vital Statistics 1970, 1971, 1973 and 1974

b) Rate per 100,000 Population

TABLE 1 - Crude annual death rate in Montana due to Selected heart disease conditions for the period between 1970-1974.

At this time, it is premature to try to estimate exactly what impact each of these developments will have on the future demand for these services.

## 3.0 Service Guidelines, Criteria and Standards

The following statements may be considered highlights of two reports recently distributed by the Inter-Society Commission for Heart Disease Resources. More detailed recommendations for cardiac catheterization laboratories and open heart surgical teams can be found in the original documents. It is suggested that groups wishing to develop these services attempt to satisfy the guidelines in the original documents. Furthermore, it is suggested that these institutions be surveyed by the American Academy of Thoracic Surgeons before making application to offer these services.

### 3.1 Costs

Institutions wanting to develop a cardiac surgery capability should be able to demonstrate that there will be a sufficient number of local patients to assure high utilization.

The radiologic hardware for the clinical cardiovascular laboratory may cost in excess of $400,000. Because the life of the equipment is relatively short, it should be amortized over a period of four to seven years. The cost of amortization has to be included in angiographic fees. Consequently, the radiologic study group of the Inter-Society Commission for Heart Disease Resources had indicated that "an optimal number of cardiovascular laboratory procedures for economic utilization would be 450 or more cases per annum (nine per week)." The group also estimated that a financial breakeven point for many cardiovascular laboratories will be at least 15 cases a week.[8,9]

The equipment costs of setting up an open heart surgery team are also large. The cost of the heart-lung unit alone currently is $20,000. Since a back-up unit is also needed, the minimum bill for profusion equipment is $40,000. In addition, most surgical teams must also now purchase an intra-aortic balloon pump (approximately $15,000). Although the cost of hardware is significant, the cost to train personnel to use it adds considerably to the expense incurred in supporting such a program.

### 3.2 Availability

Institutions in which cardiovascular surgery is performed should have a clinical cardiovascular laboratory readily available. It is desirable that the cardiovascular diagnostic laboratory be located within the same institution as the surgical unit. The establishment of clinical cardiovascular laboratories, independent of the hospitals where cardiovascular surgery is performed, should be discouraged.[10,11]

Because nuclear medicine and ultrasound services are now playing an increasingly important role in the study of many cardiac patients, it is desirable to have the catheterization laboratory functionally related to these other diagnostic modalities.[12]

A surgical team may wish to operate in more than one hospital. This may be justified if at least 75 cases per year are performed in each hospital and a single cardiovascular laboratory services the hospitals.[13] However, while the team composition may vary from one institution to another, optimal care requires that the same individuals work together regularly and frequently, preferably four or five times a week.[14]

The nature of cardiovascular surgery makes it mandatory that the following services also be available on a 24-hour emergency basis to the surgical team:

- Radiological facilities for proper contrast studies of the cardiovascular system.

- Standard laboratory facilities for blood gas analysis and pH determination. (Results of these studies should be available within 30 minutes or less of sampling).

- Full blood bank facilities.

- A complete bacteriologic laboratory in the event that problems related to clinical infection are encountered.

- Autopsy services so that postoperative deaths can be reviewed in an organized manner.

- An intensive care facility of four to six beds for all patients following intracardiac surgery. The facility must provide continuous electrocardiograph monitoring and have available equipment for electrical pacing, electrical defibrillation and respiratory support.[15]

Other desirable and necessary support facilities are specified in the JCAH Heart Disease Advisory Committees' publication, "Optimal Criteria for Care of Heart Disease Patients."[16]

## 3.3 Accessibility

Cardiac care of high quality should be provided as close to the patient's home as is feasible, without compromising his opportunity for recovery.[17] On the other hand, competing low volume programs in close geographical proximity are to be discouraged. They tend to drain case material from each other, making it difficult for either hospital to develop adequate case loads.[18] A cohesive regionally stratified system of care should be developed that links hospitals of more limited capabilities with hospitals in the region which are capable of providing services of increasing complexity. Such cooperative arrangements

would provide services of optimal quality with minimal duplication of highly trained personnel and expensive facilities.[19]

### 3.4 Continuity

Proper follow-up is an integral part of surgical treatment. Effective follow-up systems for patients having open heart surgery are the responsibility of the surgical team. The team should be able to demonstrate that it has an adequate follow-up system and that patients are seen as often as required in the immediate post discharge period and subsequently followed at appropriate intervals. Special attention must be paid to pacemaker patients to insure elective replacement of their power source.[20]

### 3.5 Quality

There can be no justification for the maintenance of a catheterization-angiocardiographic laboratory unless expertise in cardiology, cardiovascular radiology and cardiovascular surgery are readily available. The maintenance of the skills of the diagnostic team and maximal patient safety demand a reasonably heavy case load. Three hundred (300) procedures per annum is recommended as the minimal number required to maintain the expertise of the professional team.[21] Note that an optimal number for economic utilization is 450 or more cases per annum (Section 3.1). Four hundred fifty (450) cardiac catheterizations per year are also needed to generate a sufficient volume of surgical cases for the surgical team to maintain their proficiency. A number of laboratories have demonstrated that elective coronary arteriography can be performed with a mortality rate of 0.1 percent or less with a commensurately low morbidity rate. A mortality rate of less than 0.3 percent is readily attainable. Mortality rates above this level should be considered unacceptable. In addition, no more than 2 percent of the studies performed should have to be repeated because of inadequate data the first time.[22]

The occasional coronary arteriographer is to be vigorously discouraged.[23] In a community setting each angiographer should perform at least three (3) procedures a week.

Surgeons performing coronary artery surgery should be certified by the American Board of Thoracic Surgery and be able to demonstrate a high level of competence in preoperative, operative and postoperative care of cardiac patients.[24] This surgery is most successful when performed by a smoothly functioning team with each member having a clearly defined area of responsibility and authority.[25] The performance of at least 100-150 open heart operations per year by an independent team is necessary to maintain an adequate standard.[26] A case load of 200 such operations using coronary bypass is considered optimum.[27] A new cardiac surgical program should reasonably expect to attain an annual rate of 75 pump-assisted procedures within one year, and 200 such procedures within three years of initiation.[28]

| TYPE OF PROCEDURE AND TIME PERIOD | BILLINGS DEACONESS (BILLINGS) | ST. PATRICK (MISSOULA) | MONTANA DEACONESS (GREAT FALLS) |
|---|---|---|---|
| CARDIAC CATHETERIZATIONS | | | |
| 1972 | 15 | | |
| 1973 | 54 | | |
| 1974 | 69 | (8) 87 | |
| 1975 | (1) 240 (EST.) | 257 | (2) 73 |
| 1976 | 409 | 382 | (2) 111 |
| 1977 | (1) 200 (EST.) | (9) 165 | (2-3) 19 |
| 1977 (annualized estimate) | 532 | 433 | 150 |
| OPEN HEART PROCEDURES | | | |
| 1972 | 18 | | |
| 1973 | (4) 53 | | |
| 1974 | 68 | | |
| 1975 | 95 | | |
| 1976 | 174 | 94 | (7) 98 |
| 1977 | (5) 29 | (6) 35 | referred for surger (Est.) |
| 1977 (annualized estimate) | 179 | 183 | |

(1) Based on telephone conversation with W.C. Degnan, M.D., May 17, 1977

(2) Twenty percent of the total catheterizations were referred to other centers having a surgery program

(3) As of February 15, 1977

(4) Operating room closed for renovation for two months in 1973

(5) January and February, 1977

(6) To March 11, 1977

(7) Reflects only surgeries on record at the Great Falls Clinic

(8) Prior to September 3, 1974

(9) As of May 19, 1977

TABLE 2 - NUMBER OF CARDIAC CATHETERIZATIONS AND OPEN HEART SURGERIES PERFORMED IN MONTANA HOSPITALS

At least two surgeons with appropriate training for coronary artery surgery should be available at all times to provide coverage. The operating surgeon should always be available during the first 48 hours following each operation with appropriate hospital support time available for emergency procedures.[29]

In the intensive care unit, there should be no less than one registered nurse for every open heart patient during the first 24 hours. In addition to registered nurses, optimal staffing requires adequate back-up support from LPN's and aides or nursing assistants. There must also be a competent secretarial staff and messenger service.[30]

## 4.0 Description of the Present Situation

### 4.1 Inventory and Utilization Levels

Three institutions in Montana have developed clinical cardiovascular laboratories in which cardiac catheterizations are performed. These are Billings Deaconess (Billings), St. Patrick's (Missoula) and Montana Deaconess Medical Center (Great Falls). In conjunction with these facilities, Billings has one cardiac surgery team, Missoula has two and Great Falls, none.

There are no institutions which have the capability, specialists and equipment to perform cardiac surgery on infants.

Data showing the utilization of these facilities is shown in Table 2. This information was obtained from the individual providers involved. As of 1976, it appears the number of cardiac catheterizations performed at each of the institutions are at or near acceptable levels. The program in Great Falls is in its infancy and will probably continue to grow. Both surgical programs in the state are currently approaching 200 operations a year.

## 5.0 Estimate of Service Requirements

There is no generally accepted method for estimating the population base needed to support a clinical cardiovascular laboratory or a cardiac surgery unit. The main reasons for this appear to be the lack of incidence statistics for those conditions, which indicate heart surgery, clear definitions of those conditions, and estimates of the number of patients who will benefit from these operations.

Because of these problems, only extremely rough estimates of the number of cardiac diagnostic and surgical facilities needed in Montana can be obtained. These are shown in Table 3.

The procedure used to obtain these estimates is based upon the methodology developed by Hartman, Hines & Wollard at the University of Iowa.[31] The following assumptions are implicit in their approach:

- The annual number of hospital admissions per 1000 population is about 17.6 based on national statistics.

- The ratio of cardiac admissions to all hospital admissions is about 5.66% based on national statistics from PAS hospitals.

- About 14 out of every 100 patients admitted with diagnosed cardiovascular conditions are in need of cardiac catheterization services. (Based on an analysis of patient records from the cardiac catheterization unit at the University of Iowa Hospitals in October, 1971.

- Between 9 to 15 cardiac catheterizations must be performed to yield 3 to 4 surgical candidates.[32]

Based on the criteria specified in Section 3.5, a clinical cardiovascular laboratory should perform about 450 cardiac catheterizations a year. Applying this number to the projections listed in Table 3, it can be estimated that Montana can currently support two such laboratories and a third by 1985.

With respect to the number of teams doing cardiac surgery, a comparison of the guidelines with the projections in Table 3 indicate that one such team can be utilized and associated with each clinical cardiovascular laboratory.

It is emphasized that these estimates are crude and do not take into account the financial feasibility of such a venture. Individuals and/or institutions wanting to develop a cardiac surgery capability should carefully investigate this aspect before attempting it.

| | AREA | | | | | |
|---|---|---|---|---|---|---|
| | STATE | NORTH WESTERN | SOUTH WESTERN | NORTH CENTRAL | SOUTH CENTRAL | EASTERN |
| Estimated 1976 Population | 752,500 | 174,700 | 179,800 | 147,100 | 151,200 | 99,700 |
| Expected # Cardiac Catheterizations | 1,043 | 242 | 255 | 207 | 206 | 132 |
| Expected # Cardiac Surgeries | 391 | 91 | 96 | 78 | 78 | 50 |
| Estimated 1985 Population | 859,728 | 206,093 | 205,798 | 156,766 | 180,819 | 110,25 |
| Expected # Cardiac Catheterizations | 1,262 | 347 | 333 | 221 | 235 | 1 |
| Expected # Cardiac Surgeries | 473 | 130 | 125 | 83 | 88 | 4 |

TABLE 3 - Projected Number of Cardiac Catheterizations and Heart Surgeries to be Performed on Montana Residents in 1976 and 1985.

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## RADIATION THERAPY AND OTHER ONCOLOGY SERVICES

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The first five goals stated by the Committee for Radiation Therapy Studies in their revised 1972 report are presented as Montana Health Systems Agency, Incorporated's goals for the future development of radiation therapy facilities in the state.[25] They are:

1) The cancer patient should be given the most favorable management to achieve cure or long-term control and palliation of the disease.

2) The organizational structure for cancer management should provide for only the optimal level of care.

3) This optimal management should be available to all patients regardless of economic, social, or geographic considerations.

4) Multidisciplinary participation in prevention, diagnosis, treatment and follow-up must be available in any circumstance in which cancer management is undertaken.

5) Currently limited highly-trained personnel, sophisticated equipment, and facilities must be efficiently utilized with minimization of the cost being consistent with high-quality care.

In concert with these goals, facilities wishing to develop or expand their radiation therapy capability must comply with the guidelines specified in Section 3.

## RADIATION THERAPY and OTHER ONCOLOGY SERVICES

### 1.0 Service Description

Oncology is that part of medicine which deals with the diagnosis and treatment of cancer. Cancer treatment at the community level involves three basic approaches or modalities - surgery, radiation therapy and chemotherapy. Depending on the type of disease and its extent of development when diagnosed, these approaches are used singly, sequentially or in combination.

The intent of surgery is to physically remove the tumor from the body. This is still the oldest and most widely used form of cancer treatment. Radiation therapy attempts to destroy or shrink the tumor through the use of radioactive emissions which kill diseased cells without permanently damaging healthy ones. It is currently being used either curatively or for the reduction of pain (palliation) in over one-half of all cancer patients at some stage of their disease. Chemotherapy involves using drugs to treat cancer patients. At this time, about forty (40) drugs have been developed which temporarily inhibit some forms of cancer, relieve pain and permit the patient to live a longer, more comfortable life. A fourth modality, Immunotherapy, is in its earliest form and is expected to grow.

Because the three approaches to cancer care (surgery, radiation therapy and chemotherapy) are so vastly different, the American College of Surgeons (ACS) has recommended that local programs combine all three into a cooperative multidisciplinary effort. The radiation therapist and medical oncologist (chemotherapist) often form the nucleus of the cancer control team, working closely with the referring physician to plan the total care of the patient.

Of the three modalities used in cancer treatment, radiation therapy is the most dependent on costly equipment. The equipment used can be categorized by the voltage range in which it is operated:

- High Energy units operate with radiation energies greater than three million volts. Linear accelerators and Betatrons fall into this category.[1] High energy units offer several advantages over medium and low energy radiation sources. They provide greater depth for the radiation dose, shorter treatment time, less scattering of the therapeutic beam, and less radiation absorption into the skeleton. They can also have less effect on the patient's skin.[2] Also, they can emit particles (i.e. electrons) for irritation as well as X-rays. On the other hand, these types of therapy units require more periodic maintenance, adjustments, repairs and

recalibration than do the radioactive source units. A trained radiation physicist must be available to perform these functions.

- Medium Energy machines operate in the range between 600 kilovolts and 2 million volts. Cobalt 60 and Cesium 137 are commonly used as radiation sources for these units.[3] Cobalt 60 units have been the backbone of many radiation therapy departments for many years; Cesium 137 units are less common. These machines take more time to treat patients and are somewhat less precise than the high energy units. On the other hand, they appear to be more reliable (i.e. less equipment down time) and, in some cases, they have a greater rotational capacity to treat the patient from many different angles than some linear accelerators.

- Orthovoltage X-ray machines operate in a range between 140 and 600 kilovolts. These machines are used to treat superficial tumors on or just beneath the surface of the skin.[4] Orthovoltage units are currently being phased out of general medical practice.

- Superficial X-ray units usually operate with less than 140 kilovolts. They are used primarily to treat skin cancer and other superficial lesions.[5]

In addition to the machines that are used to treat cancer, an important component of an oncology center is the isotope division. This division uses radioactive sources to treat cancer of the tongue, prostate, cervix and lung. Cesium, I-125, Tantalum, and Iridium isotopes are either directly implanted into the tumor or placed in a cavity adjacent to the tumor.

## 1.2 Geographic Boundaries

The geographical area used for these guidelines is the entire state of Montana and each of the five subareas identified in this plan. The focus will be on facilities having cancer programs or a radiation therapy capability. The impact on existing programs located outside the state, but serving a large number of Montana residents, will be considered when the feasibility of developing new local programs is investigated. Facilities which appear to be most affected under these circumstances are located in Salt Lake City and Spokane.

# 2.0 Trends

## 2.1 Incidence, Prevalence and Mortality

In Montana, no reliable local estimates of cancer incidence are currently available. A cooperative tumor registry, in which most hospitals treating cancer patients are participating, has recently been developed. In the future, estimates

of the local incidence of cancer will be available from this system. In the meantime, the American Cancer Society estimates that 2,100 new cases of cancer will be diagnosed in the state in 1976.[6] This statistic is derived from the third annual cancer survey which was conducted in 1971. Using the same data base, the National Cancer Institute estimates that the annual national rate for all newly diagnosed cases is 3.0 per 1,000 population.[7]

Cancer is primarily a disease of middle and old age individuals. In Montana, the median age of patients at diagnosis with five of the most common types of cancer is 63.7 years (lung), 69.1 years (colon), 67.5 years (breast), 38.0 years (cervix uteri), and 73.9 years (prostate). These are not significantly different from national statistics. It does appear, however, that their rank order is not the same. Uterine cancer in Montana, for example, appears to constitute a considerably larger percentage of all cancers diagnosed than in the U.S. It makes up 18 percent.[8] (However, more recent national estimates report it to be about 14 percent).

With respect to mortality, it appears that mortality in Montana is somewhat less than in the U.S. as a whole. The National Cancer Institute reports that for the period between 1950 and 1969, the age-adjusted death rate for the United States was 174.04 and 130.10 for white males and females, respectively. The corresponding rates for Montana residents were 153.07 and 119.28.[9] Even so, four counties (Silver Bow, Lewis & Clark, Petroleum, and Fallon) possessed age-adjusted death rates for males ranking in the upper ten percent of all U.S. counties. For females, most Montana counties had cancer mortality rates not significantly different from the U.S. Sixteen counties were significantly lower than the nation while four counties were in the highest ten percent, but they weren't considered significantly high.[10] In addition, more recent mortality data (from 1970 through 1974) indicates that the crude death rates in Montana have remained about the same and are relatively stable.[11]

## 2.2 Service Trends

In the 1960's and early 1970's, cancer treatment was marked by a growth in the use of both radiation therapy and chemotherapy. With respect to radiation therapy, the subcommittee on Regional Medical Programs of the Committee for Radiation Therapy, has reported five trends taking place.[12] These are:

- The utilization of radiation therapy services has increased.

- The pressure of diagnostic radiology practice is causing many general radiologists to give up any involvement with radiation therapy.

- The number of physicians being trained in therapeutic radiology is declining. (This trend appears to have been reversed of late and the number of radiation therapists is increasing).

- The number of technologists being trained in radiation therapy is not increasing.

- There is a trend toward the development of major centers for cancer therapy.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Institutions wanting to develop a new radiation therapy facility, expand its current capability, or replace existing equipment should demonstrate that there is a sufficient number of locally unserved cancer patients in their catchment area to economically justify the new equipment without making the cost of treatments excessive. As a general rule, the revenue generated by a new high energy or medium energy unit should be able to support its own direct operating costs, depreciation costs and its share of overhead costs. In order to demonstrate feasibility, the breakeven point should be reached within three years after initial operation given prevailing prices.[13]

In estimating financial feasibility, the costs born directly by the patients, such as transportation and lodging expenses incurred while being treated, should also be considered.

### 3.2 Accessibility and Availability

Each institution and provider caring for cancer patients should establish referral and consultant relationships with more sophisticated cancer centers. Institutions with cancer treatment resources should encourage their medical staffs to take a multidisciplinary approach to cancer care.[14]

Radiation therapy facilities with high or medium energy units should serve a population of at least 150,000 persons.[15] Because Montana is sparsely populated and many of the patients receiving radiation therapy are treated on an outpatient basis, it is suggested that each facility can serve an area with a radius of at least 150 miles.

### 3.3 Continuity

Physicians caring for cancer patients should attempt to follow-up on each patient at least annually. Institutions caring for cancer patients should participate in an organized registry system so that follow-up is assured. (The American College of Surgeons requires in approved programs that at least 90% of a facility's patients be contacted annually).[16]

## 3.4 Quality

The Cancer Advisory Committee of the Joint Commission on Accreditation of Hospitals recommends that a minimum of 300 new radiation therapy cases, exclusive of patients with skin cancer, per year be the initial load projection for any new cobalt or linear accelerator facility being planned.[17] Optimally, one radiation therapist should be employed for every 250-300 new patients.[18] A base of 500 new cancer cases is needed to keep a chemotherapist busy full time.[19] Expertise in both fields should be readily available to the institution wishing to develop a community cancer program around the purchase of a linear accelerator or other high energy equipment.

Formal arrangements should be made for the services of a radiation physicist and dosimetrist. There should be two radiation therapy technologists for each fully utilized megavoltage radiation source.[20]

For institutions already having medium energy radiation equipment, these units should be under the responsibility of a physician who is certified or eligible for certification in therapeutic radiology by the American Board of Radiology. Physicians certified in general radiology and who devote most of their professional time to the investigation and management of neoplastic disease may also assume responsibility for these units.

Institutions developing comprehensive cancer programs are encouraged to become approved by the American College of Surgeons. To be an approved cancer program, hospitals must be accredited by the Joint Commission on Accreditation. Non-hospital medical institutions must be certified by their respective state or county medical societies. In addition, these institutions must also have a multidisciplinary cancer committee which is responsible for:

- A functioning Cancer Registry with periodic reports to the staff. The primary function of the registry is to follow-up on cancer patients, and a follow-up percentage of less than 90% is unacceptable for a cancer program.

- Multidisciplinary educational cancer conferences that are held at least monthly.

- Consultation services which at the community level often take the form of tumor boards.

- A system of quality of care evaluation, with documentation of its operation.[21]

Institutions with cancer programs should also provide in-house psycho-social support services for their patients with provisions for continuing support from local community resources when needed. Because radiation therapy is often given on an outpatient basis, these facilities should attempt to assist their out of town ambulatory patients in finding low cost housing while undergoing treatment.

## 4.0 Description of the Present Situation

### 4.1 Inventory and Utilization Levels

In Montana, those facilities which care for roughly 100 or more new cancer patients annually or have supervoltage radiation therapy equipment are identified in Table 1.

Based on 1970 and 1971 data, there are eight hospitals which care for at least 100 new cancer patients annually. Two of these, the Kalispell Regional Hospital in Kalispell and Holy Rosary Hospital in Miles City have no medium energy radiation therapy capability in their immediate area.

The state has seven facilities which have medium energy radiation units. In Missoula and Great Falls, one radiation therapy facility serves each community. In Southwestern Montana, there are three cobalt 60 units located in each of the three largest communities.

In Billings, there are two radiation therapy facilities. The Northern Rockies Regional Cancer Treatment Center has the only linear accelerator in the state and apparently serves most of South Central and Eastern Subareas as well as the large part of Northeastern Wyoming. The Cobalt 60 unit at Billings Deaconess Hospital is primarily used for palliation and is under the supervision of radiation therapists in Billings.

At the present time, the long range plans of three institutions (Kalispell Regional Hospital, St. Patrick's Hospital and Columbus Hospital) call for the development or expansion of their additional therapy services within the next five years. Apparently, all three intend to purchase linear accelerators.

It appears that only two radiation therapy units are currently being sufficiently utilized to be self-supporting. These are located in Billings and Great Falls. Two Board Certified Radiation Therapists are associated with both programs and both programs also have an inhouse dosimetry capability.

Each of the units which appears to be currently less utilized treat an average of less than ten patients a day. All are under the direction of a general radiologist. These physicians spend roughly 15 to 40 percent of their professional time in radiation therapy; the remaining time is spent in diagnostic radiology. Dosimetry services are obtained from organizations out of state.

| Facility | Reported no. of Cancer Patients | | Radiation Therapy Equipment | | | | Utilization of Super & Megavoltage Equip. | | | Implants |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1970[1] | 1971[2] | Mega-Voltage | Super-Voltage | Ortho-Voltage | Super-Ficial | Est. No. Patients Treated Daily 4 | % Treated Palliatively | % Treated for Cure | |
| Kalispell Regional Hospital (Kalispell) | 115 | 95 | | | | | | | | |
| St. Patrick (Missoula) | 114 | 173 | | | | X | | | | X |
| Western Montana Clinic (Missoula) | - | - | | CO-60 | | | 7 | 60% | 40% | |
| St. James Community (Butte) | 111 | 152 | | CO-60 | | | 5 | 80% | 20% | |
| Bozeman Deaconess (Bozeman) | NR | 24 | | CO-60 | | | 6 | 70% | 30% | X |
| St. Peter's (Helena) | 57[3] | 68[3] | | CO-60 | | X | 10 | 70% | 30% | |
| Columbus (Great Falls) | 80 | 133 | | CO-60 | X | X | 35-40 | 60% | 40% | X |
| Montana Deaconess (Great Falls) | 96 | 150 | | | | | | | | |
| St. Vincent (Billings) | 126 | NR | | | | | | | | X |
| Billings Deaconess (Billings) | 114 | NR | | CO-60 | | | 2 | 100% | | X |
| Northern Rockies Regional Cancer Treatment Center(Billings) | - | - | 12Mev. | CO-60 | | | 27 | 37% | 63% | |
| Holy Rosary (Miles City) | 97 | 31 | | | | | | | | |

1. Reference 22
2. Reference 23
3. Reflects data from both St. Johns's and St. Peter's Hospitals
4. Based upon an informal survey conducted in November 1976.

TABLE 1
Institutions in Montana treating about 100 new cancer patients yearly or having Supervoltage Radiation Therapy Units.

As shown in Table 2, two institutions in Montana have local cancer programs approved by the American College of Surgeons. Regular cancer conferences or tumor boards for the medical staff are held in each institution having a medium energy radiation therapy unit. The frequency of the meetings vary from community to community. It appears that these meetings are well attended. All three of the major cancer disciplines are represented, although in the smaller communities the role of the chemotherapist is taken by an internist or surgeon having an interest in the area.

Each of the major institutions treating cancer patients are participating in a tumor registry under the general sponsorship of the Montana Foundation for Medical Care. The data is sent to Salt Lake City for processing. Annual reports are made available to each institution and each physician is periodically furnished with a list of patients he has treated.

At the national level, seventeen comprehensive cancer centers have been designated by the National Cancer Institute pursuant to the National Cancer Act of 1971. Of these, three consider parts of Montana to be within their service area. These are the Fred Hutchinson Cancer Research Center in Seattle, the Mayo Clinic in Rochester, Minnesota, and the Colorado Regional Cancer Center in Denver. Although these cancer centers are not expected to treat all cases of cancer, the latter two may be considered referral resources for some cases. In addition, each comprehensive center is expected to impact on the quality of cancer care throughout the nation through their respective demonstration and outreach programs.

### 4.2 Problems

Only two cancer programs in Montana are approved by the American College of Surgeons. More institutions, especially those with a radiation therapy capability, should be encouraged to develop approved programs.

In addition, several of the existing radiation therapy units appear to be underutilized. In Southwestern Montana, there are more medium energy units than the population can apparently justify.

Finally, the distribution of radiation therapy facilities serving Montana residents demands that many patients and their families be displaced while receiving care. There appears to be little or no low cost, short stay residential facilities available to these persons.

## 5.0 Estimate of Service Requirements

The estimated 1976 and 1985 need for high energy radiation therapy equipment for each of the five subareas of

## REGULAR TUMOR BOARDS & CANCER CONFERENCES

| FACILITY | APPROVED CANCER PROGRAM | FREQUENCY | ESTIMATED AVERAGE M.D. ATTENDENCE |
|---|---|---|---|
| St. Patrick (Missoula) | No | Held in conjunction with Western Montana Clinic | -- |
| Western Montana Clinic (Missoula) | Yes (Special Program Category) | Weekly | 30 |
| St. James (Butte) | Yes (Category III) | Monthly | 10 |
| Bozeman Deaconess (Bozeman) | No | Monthly | 25 - 30 |
| St. Peter's (Helena) | No | Bi-Weekly | 20 |
| Columbus (Great Falls) | No | Bi-Weekly | 30 - 40 |
| St. Vincent's (Billings) | No | Monthly | N/A |
| Northern Rockies Regional Cancer Treatment Center (Billings) | No | Weekly | N/A |

TABLE 2 - TUMOR BOARDS & CANCER CONFERENCES IN MONTANA INSTITUTIONS[1]

1 Based on an informal survey conducted in November 1976.[22]

Montana is presented in Table 3. The estimates are based upon expected utilization of the units with the following assumptions:

- The overall incidence of cancer in Montana is about the same as national estimates (i.e. 3.0 new cancer patients per 1,000 population).[23]

- About 50% of new cancer patients will require radiation therapy.

- Each patient beginning radiation therapy will require an average of 30 separate treatments.

- Each high energy unit can deliver between 9,000 and 10,000 treatments a year.[24]

By 1985, the Northwestern and Southwestern subareas will have more cancer patients needing radiation therapy treatments than can be handled by a single megavoltage unit. Yet, neither area will have a sufficient case load to justify two units. Assuming that the Cancer Treatment Center in Billings will continue to serve Eastern Montana and Northeastern Wyoming in 1985, the same will be true for the South Central area.

| | AREA | | | | | |
|---|---|---|---|---|---|---|
| | STATE | NORTH WESTERN | SOUTH WESTERN | NORTH CENTRAL | SOUTH CENTRAL | EASTERN |
| Estimated 1975 Population | 752,500 | 174,700 | 179,800 | 147,100 | 151,200 | 99,700 |
| Estimated # New Cancer Patients | 2,258 | 524 | 539 | 441 | 454 | 299 |
| Estimated # Patients Requiring R.I. | 1,129 | 262 | 270 | 221 | 227 | 150 |
| # R.I. Units Needed | 4 | 1 | 1 | 1 | 1 | 0 |
| Estimated 1985 Population | 859,728 | 206,093 | 205,798 | 156,766 | 180,819 | 110,252 |
| Estimated # New Cancer Patients | 2,579 | 618 | 617 | 470 | 542 | 331 |
| Estimated # Patients Requiring R.I. | 1,290 | 309 | 309 | 235 | 271 | 166 |
| # R.I. Units Needed | 5 | 1 | 1 | 1 | 1 | 0 |

TABLE 3 - Estimated Current and Future Need for High Energy Radiation Therapy Units in Montana

1 Based on Population Projection furnished by the Division of Community Affairs

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## NEONATAL INTENSIVE CARE UNITS

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The main goal is to reduce perinatal morbidity, mortality and sequelae of birth associated events in Montana. Another goal is to provide the best possible advice and care before conception, prenatally, neonatally, and postnatally.

There are many external factors which influence the above goals. These factors are socioeconomic, educational, political and climatic. However, these goals can be attained through:

1) Providing public educational programs.
2) Providing acceptable, accessible prenatal care.
3) Providing quality hospital care and NICU facilities. Each hospital takes the initiative to develop its own NICU through:

    a - improved staffing
    b - acquiring additional and improved equipment
    c - developing transportation systems
    d - developing referral patterns

    Community hospitals and the physicians must be fully participatory in formulating and agreeing with the regional plan.

4) Increasing the clinical expertise in the neonatal intensive care units.
5) Making expertise available through the units to the outlying areas.
6) Regionalizing services:

    a - communication
    b - consultation
    c - transportation

7) Research current care practices and the effect upon neonatal morbidity and mortality.

8) Communities with more than one hospital providing OB services should consider consolidating services.

Specifically, these goals and objectives are better understood when applied to the following recommendations for each of the five planning areas (subareas) established by the Montana Health Systems Agency. The following possibilities are predicated on increased population and births.

### NORTHWESTERN

No major changes in service delivery are planned.

SOUTHWESTERN

Two neonatal nurseries could be established in the future. It is recommended that St. Peter's Hospital in Helena or Bozeman Deaconess Hospital in Bozeman be reviewed for advancement.

SOUTHCENTRAL

No major changes in service delivery are planned for this area. The maintenance of high quality care is stressed.

NORTH CENTRAL

The addition of one neonatal nursery service is anticipated. This will depend upon this area's ability to attract personal (physician) care for high risk neonates.

EASTERN

It is anticipated that by 1985 no additions with neonatal intensive care service will be needed.

## 1.0 Service Description

### 1.1 Description

A neonatal intensive care unit (NICU) is a unit which provides specialized facilities, trained personnel and specialized equipment for maximum support of the sick, prematurely born, and term-infants during the neonatal period (first four (4) weeks of life or 28 days).

The establishment of three levels of hospital care for the newborn came as a result of the concept of regionalization of this service. The Level I hospital, or the community level, provides for the management of uncomplicated maternal and neonatal patients and the temporary transitional care of those with unpredictable complications. The Level I hospital does not have the facilities, the medical and nursing expertise available, or the volume of deliveries to properly manage the high risk mother or infant. Level II hospitals, or Intermediate Centers, are hospitals with properly equipped and staffed newborn and intensive care nurseries. The majority of high risk pregnancies and newborns can be handled by these hospitals. These units should serve all of the Level I hospitals in the catchment area and be equipped to send trained personnel to the Level I hospital to transport a high-risk patient to their center. Level III is the Regional Center - a university center which handles all of the problem cases referred to it by the Level II and often Level I centers. The Level I, II, and III systems of newborn care are not rigid ones and many hospitals in the Level I category may be able to handle some of the problems that other Level I hospitals are not equipped to handle.

The major conditions and illnesses treated in neonatal nurseries and units are:

1) prematurity
2) respiratory disease; birth asphyxia, hyaline membrane disease, etc.
3) congenital heart disease
4) other congenital anomalies
5) infectious disease including sepsis, meningitis and pneumonia, and
6) metabolic diseases.

In the last few years, respiratory disorders have become more easily identified and managed than in the past, thus respiratory care is given a high priority. All of the above maladies are the leading causes of death for infants under one year (accounting for 80% of total infant deaths). Optimal care is essential to protect against later neurologic and/or sensory handicapping.

Because of the need to heavily staff these units with skilled personnel (board certified obstetricians, pediatricians, neonatologists, nurses with obstetric and neonatal training, all of whom are needed 24 hours a day as are the laboratory and X-ray technicians, respiratory therapists), and the amount of technical equipment involved, it is important that they be used effectively and provided only to the extent needed.

## 1.2 Geographic Boundaries

The state of Montana is serviced by the regional neonatal network. Portions of northern Wyoming (the Sheridan and Powell areas) and western North Dakota refer possible secondary care patients (Level II) to Montana. Out of state referrals (Level III) are primarily to Salt Lake City, Seattle, Denver, the University of Minnesota and the Mayo Clinic.

# 2.0 Background Trends

## 2.1 Service Trends

Regionalization and specialization describe the major trends in neonatology. Specifically, these trends are:

- the consolidation of obstetric services among hospitals in order to provide a base of at least 1,500 to 2,000 deliveries, and thus consolidation of a high number of anticipated neonatal problems,
- the development of regional centers for high risk delivery services with intrapartum ICU's,
- intensive physiological maternal and fetal monitoring,
- complex diagnostic and treatment procedures,
- the consolidation of neonatal intensive care cases in regional centers for optimal care of the neonate and for cost-effectiveness for the hospital supplying the service,
- the involvement of both the father and the mother in prenatal education, the birth process, and infant contact during the first days of life,
- use of neonatologists (board certified pediatricians with specialized training in neonatology) in the care of high-risk infants, and
- development of intensive care nurseries on a regional basis.

## 2.2 Incidence, Prevalence and Mortality

One of the best indicators of whether a baby will survive is its gestational age and birth weight. This is true even when mortality rates are corrected for other significant variables such as social class, maternal age, parity, and race.[1]

Infants weighing 2500 grams or less (under 5½ pounds) have a neonatal death rate about 22 times the rate as is for heavier babies, and account for two-thirds of all neonatal deaths.[2]

In the four states which comprise the region (Montana, Idaho, Wyoming and Nevada) there are 3,000 low weight births a year (births of less than 2500 grams or 5.5 pounds). Approximately 300 infants are born each year weighing less than 1500 grams (3.3 pounds). As stated previously, 40 to 80 percent of these infants are expected to receive neurological damage if neonatal intensive care is unavailable.[3]

Prior to the establishment of a newborn intensive care unit, experiences with immature and low birth weight infants were fairly universal. Infants of less than 1500 grams (3.3 pounds) birth weight had a 40 to 80 percent expectation of being severely retarded. Since the initiation of NICU's, severe retardation of distressed infants is less than 10%.[4]

Using 60% as a basis, (median between 40 and 80 percent) 180 of the 300 low weight births are likely to be severely retarded if there are no intensive care units. If the units are available, only 10%, 30 of the 300 infants, are expected to become severely retarded.[5]

## 3.0 Service Guidelines and Criteria

To make optimal maternal-fetal and neonatal care suitable to the needs of each patient, a regional approach is necessary. "In defining a region, the critical factors include the population base and the requirements for prenatal and neonatal services that this population base will generate."[6] In planning to meet these needs, the cost, availability, accessibility and distance, continuity, acceptability, and quality of the service must be addressed.

### 3.1 Cost

In a regional system, new costs will be generated due to an increase in consultation, an increase in the number of infants transferred from one hospital to another, and an increase in the number of patients to whom expensive technology and expertise will be available when needed.

The high cost of Level II and Level III service units was examined by the committee on perinatal health.

A hypothetical Level II unit providing inpatient care for 1500-2000 live births at a 85% average occupancy would expend 62.7% of its budget on 81.2% full time equivalent positions. Two positions are independent contract physicians at the appropriate level of training. Expenses for equipment and supplies account for 8.6% of the budget. Operational

overhead is 28.3%. Inservice education accounts for 0.1%. The calculated total of this model, which allows for shift differentials and fringe benefits, amounts to 1.2 million dollars.[7]

3.2 Availability

Skilled medical and nursing staff, support service staff, adequate facilities and equipment must be available on a 24 hour basis.

3.3 Accessibility

Neonatal intensive care units (Level II) should be developed in hospitals where ideally there are approximately 1500-2000 live births annually and/or a high number of neonatal problems to support the service, or when geographic and distance factors justify the development of such a service.[8]

Providers should maintain established referral patterns to the three major centers; Denver, Salt Lake City and Seattle. This system should be orderly, efficient, and rapid, resulting in the ability to safely transport the infants unable to be adequately cared for in either Level I or II centers. Frequent visits by the medical staff from the medical center to the Class II nurseries is essential.

3.4 Continuity

The physician at the initial level of care who will be primarily responsible for initiating requests for consultation must have the opportunity to participate in the mother's care as she and/or her infant move through the regional system.

Lines of communication between hospitals and physicians must be established and maintained in such a way that consultation in both directions is readily available.

Education of the physician and nurses in the Level I hospital is essential to identify high risk mothers and possible neonatal problems.

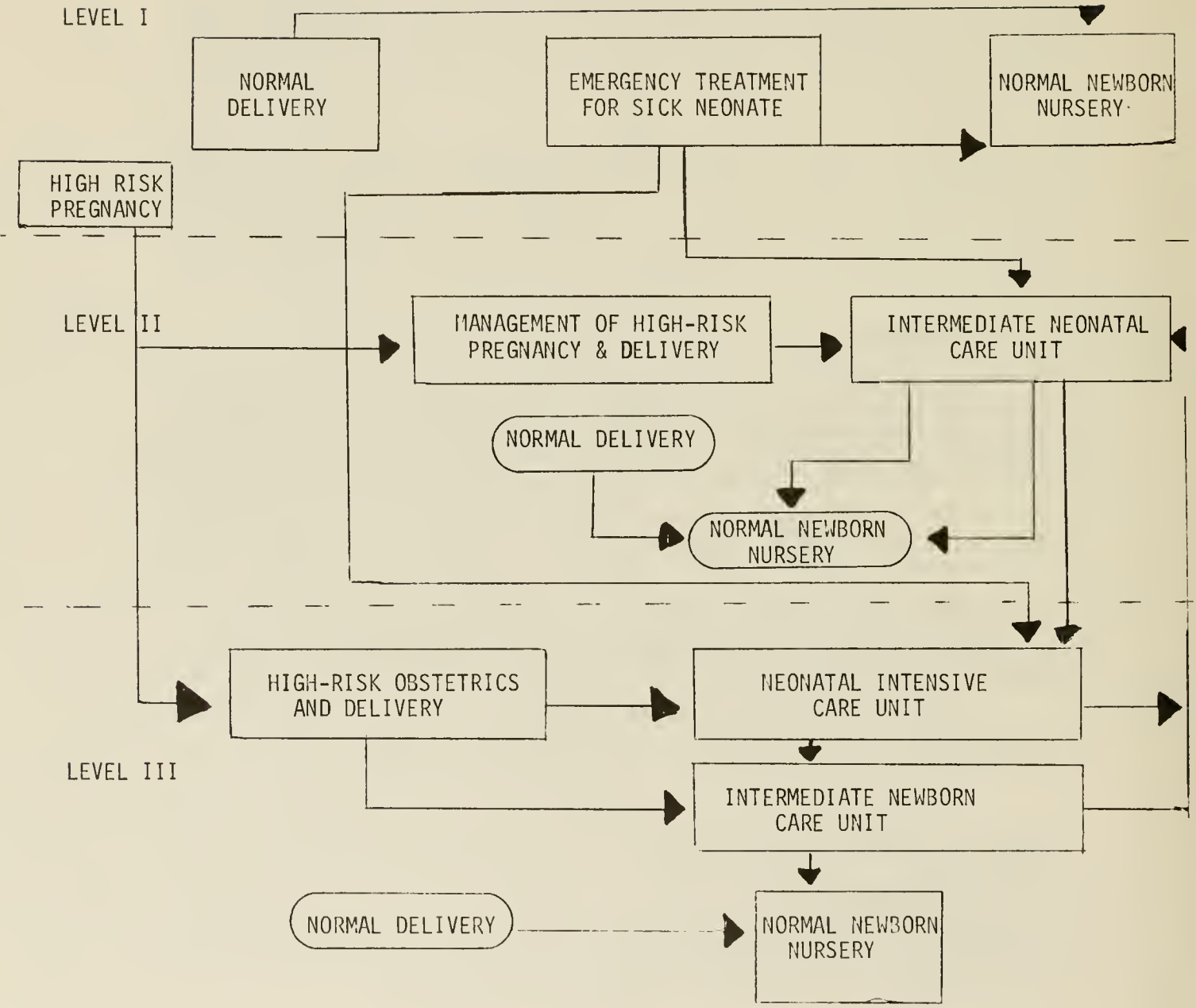
Provisions must be made to insure the expeditious return of mothers and/or infants to the most convenient facility qualified to provide the level of care needed.

Figure I shows the natal care system with arrows demonstrating referral patterns.

3.5 Acceptability

The persons utilizing the neonatal services directly and indirectly (patients, family and friends) should be treated on a personal basis with respect and dignity.

FIGURE 1


LEVEL I
NORMAL DELIVERY
EMERGENCY TREATMENT FOR SICK NEONATE
NORMAL NEWBORN NURSERY
HIGH RISK PREGNANCY
LEVEL II
MANAGEMENT OF HIGH-RISK PREGNANCY & DELIVERY
INTERMEDIATE NEONATAL CARE UNIT
NORMAL DELIVERY
NORMAL NEWBORN NURSERY
HIGH-RISK OBSTETRICS AND DELIVERY
NEONATAL INTENSIVE CARE UNIT
LEVEL III
INTERMEDIATE NEWBORN CARE UNIT
NORMAL DELIVERY
NORMAL NEWBORN NURSERY

## 3.6 Quality

Neonatal intensive care nurseries and units (Level II) should ideally have a base of at least 1000 and 1500-2000 live births a year respectively, as well as the number of neonatal problems in an area. They should be located in acute care general hospitals, have the service of a full or part time neonatologist, or a well trained pediatrician be staffed by nurses with specialized, intensive training, and have referral arrangements.[9]

Detailed guidelines of the support services necessary to maintain these specialized facilities are listed in "Guidelines for Newborn Care in Montana" developed by the Maternal and Child Health Bureau, Department of Health and Environmental Sciences.[10]

## 4.0 Description of the Present Situation

Presently, every hospital in Montana, with six exceptions to be mentioned, is classified as a Level I hospital. Holy Rosary Hospital in Miles City is one of the exceptions for it maintains an advanced nursery, and does not anticipate to be expanded to a Level II position at this time.

St. Vincent's Hospital in Billings, Montana Deaconess Medical Center in Great Falls, Missoula Community Hospital in Missoula, Kalispell Regional Hospital in Kalispell and St. James Hospital in Butte, have functioning Newborn Intensive Care Units, (Level II), though Butte has only one pediatrician at this time.

From July 1972 to July 1976, the Mountain States Regional Medical Program, based in Great Falls, Montana, received the funding for neonatal services. These funds helped to establish a regional network and provide staff travel, consultant services, workshops and special training programs. Outreach programs for rural communities and counties are provided by registered nurses and physicians. Now that the Mountain State Regional Medical Program no longer is in existence, the Mountain States Health Corporation has assumed these duties. A $40,000 grant provides funding until July 1, 1977.

## 4.1 Inventory and Utilization Levels

The transport service is controlled by the Level II centers. Appropriate transport facilities with personnel and equipment are dispatched to the referring hospital. The transport team is available 24 hours a day, 7 days a week.

The utilization level of each hospital is high, for the advance in technology has resulted in an increased demand for the services.

## 4.2 Problems

Because of the increased demand for neonatal services, tertiary centers (Level III) are overcrowded. As a result, these centers cannot accept new patients and send patients back to the referring hospitals before extended stabilization of the patient has occurred.

The cost of a well developed network is high, as well as the cost of training, continuing education programs, workshops and outreach. The standard care that can be delivered in the Level I hospital is not clear. This problem must be studied and delineated.

## 5.0 Estimate of Service Requirements

Table 1 shows the 1976 and 1985 population, estimated number of births and estimated number of facilities needed. The number of units required are based on the criterion that 1500-2000 births are needed for the establishment of each Level II unit.

Birth estimates are based on 1974 birth rates. Because the overall birth rate appears to be declining, these estimates may be considered high. Thus, it is suggested that before any institution attempts to develop a neonatal intensive care nursery or unit, a thorough examination of the local situation should be conducted.

At present, the five NICU's and one intensive care nursery are adequately servicing the needs and demands of Montana. By the year 1985, the need for increased services becomes evident as the total number of births increase. Table 2 indicates the projected number of births, the number of neonatal intensive care beds as well as the total number of Level II neonatal beds necessary to support the NICU service in each subarea. These estimates were obtained by applying the methodology developed by Paul R. Swyer.[11] The following assumptions are implicit in this methodology:

1) An intensive care bed is defined as one which provides the possibility of physiological monitoring, life support systems, and a 1:1 or 1:2 nurse/patient ratio.

2) Each intensive care newborn occupies a bassinet an average of 6 days. Thus, one bed handled 60 patients per year, (365.6).

3. The mortality rate in the NICU is about one-third of all admissions.

TABLE 1

ESTIMATED NUMBER OF NICU's BY SUBAREAS

| | STATE | NORTH WESTERN | SOUTH WESTERN | SOUTH CENTRAL | NORTH CENTRAL | EASTERN |
|---|---|---|---|---|---|---|
| Estimated 1976 Population | 752,500 | 174,700 | 179,800 | 151,200 | 147,100 | 99,700 |
| Estimated Number of Births, 1974 | 11,815 | 2,669 | 2,541 | 2,406 | 2,648 | 1,551 |
| Estimated Number of Intensive Care Units (Level II) Required | 4 | 1 | 1 | 1 | 1 | 0 |
| Estimated Number of Intensive Care Nurseries Required | 2 | 1 | 0 | 0 | 0 | 1 |
| Estimated 1985 Population | 859,728 | 206,093 | 205,798 | 180,819 | 156,766 | 110,252 |
| Estimated Number of Births | 14,297 | 3,808 | 3,317 | 2,587 | 3,006 | 1,474 |
| Estimated Number of Intensive Care Units (Level II) | 5 | 2 | 1 | 1 | 1 | 0 |
| Estimated Number of Intensive Care Nurseries | 3 | 0 | 1 | 0 | 1 | 1 |

TABLE 2

ESTIMATED NUMBER OF NICU BEDS BY SUBAREAS

| | STATE | NORTH WESTERN | SOUTH WESTERN | SOUTH CENTRAL | NORTH CENTRAL | EAST |
|---|---|---|---|---|---|---|
| 1975 | | | | | | |
| 5 Year Neonatal Mortality Rate | 14.8 | 15.3 | 18.3 | 12.9 | 12.5 | 14.6 |
| Estimated Number of Births | 11,815 | 2,669 | 2,541 | 2,406 | 2,648 | 1,551 |
| Neonatal Intensive Care Unit Beds Required | 8.7 | 2.04 | 2.33 | 1.55 | 1.66 | 1.13 |
| Number of Level II Beds Required (NICU Beds & Recovery) | 60.9 | 14.28 | 16.3 | 10.85 | 11.6 | 7.9 |
| 1985 | | | | | | |
| 5 Year Neonatal Mortality Rate | 14.8 | 15.3 | 18.3 | 12.9 | 12.5 | 14.6 |
| Estimated Number of Births | 14,297 | 3,808 | 3,317 | 2,587 | 3,006 | 1,474 |
| Neonatal Intensive Care Unit Beds Required | 10.58 | 2.91 | 3.04 | 1.67 | 1.88 | 1.0 |
| Number of Level II Beds Required | 74.06 | 20.37 | 21.28 | 11.69 | 13.16 | 7.4 |

4) The potential admissions to an NICU is the regional neonatal mortality rate (per 1000 live births) x 3/1000 live births.

5) Transitional and convalescent care beds are required for each NICU bed in a ratio of 6:1. Thus, of the total Level II beds needed, 1/7 are within the NICU and 6/7 are transitional and convalescent beds.

At the present time, there are 57 Level II beds in operation.[12] Although it appears that Montana can support 64 beds in 1975; 75 in 1980 and 87 in 1985, the number of Level II beds currently in operation seem to be able to adequately handle the case load until 1985. By 1985 some expansion of services, not the number of beds, will be required. In summary, it is the upgrading of present service capabilities which is recommended.

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## END STAGE RENAL DISEASE

### GOALS, OBJECTIVES, RECOMMENDATIONS

The major goal is to assure that through 1985, all modes of treatment and rehabilitation are available to all individuals with end stage renal disease.

Objectives which must be addressed are:

- Between 1976 and 1985, an increase in the number of cadaver kidneys available for use by patients for whom transplanation is the medically and personally preferable mode of treatment is needed.

- To educate the medical community to solicit donors.

- To educate the public about the importance of kidney transplantation as a treatment method and the desirability of donating kidneys for this purpose.

- To urge the federal government to change the home dialysis reimbursement formula so that payments to an individual assisting the patient in the dialysis procedure are a reimbursable expense.

There is a strong indication that the demand for in-facility hemodialysis will grow through 1985. Because of the high cost of hospital based ESRD services and the geographic barriers limiting access to these hospital facilities in Montana, (home) self-dialysis programs should be promoted.

There is a definite need for non-hospital based support services. Home care programs should be developed to care for home dialysis patients, as well as the provision of the whole range of social services for all ESRD patients. Facilities providing ESRD services shall provide or contract with agencies that do provide rehabilatative services.

Guidelines specifying requirements for training programs must be developed. Certification of technicians trained in dialysis should be established.

Home care self-dialysis training programs should be encouraged and the four existing ESRD service units may develop their own home care training programs when the volume dictates.

# END STAGE RENAL DISEASE

## 1.0 Service Description

### 1.1 Definitions

End stage (chronic) renal disease (ESRD) is defined as that stage of advanced kidney failure or renal functional impairment which can no longer be favorably influenced by conservative management alone (such as diet modification and medication), thus requiring dialysis or transplantation for maintenance of life. [1]

Section 2991 of P.L. 92-603, the 1972 Social Security Amendments, established a federal program to finance care for nearly all end stage renal disease patients. The cost of care is high (approximately $650 per week in many areas). To qualify for benefits a patient must suffer from permanent kidney failure and must either meet Social Security insured status requirements or be receiving monthly Social Security cash benefits. Those not covered by the ESRD program are teachers, government employees, college students over 21 and others who have not worked under the Social Security program.

Dialysis is a process in which waste products are removed from the body by diffusion from one fluid compartment to another across a semipermeable membrane. Hemodialysis and Peritoneal dialysis are the two types of dialysis in clinical usage. Hemodialysis is the process by which blood is passed through an artificial kidney machine and the waste products diffuse across a man-made membrane into a bath solution known as dialysate. The cleansed blood is then returned to the patient's body. In peritoneal dialysis, the waste products pass through the peritoneal membrane into the peritonal (abdominal) cavity where the dialysate is introduced and removed periodically.

There are five ways to administer the two types of dialysis, namely; regular (chronic) maintenance dialysis, back-up dialysis, acute dialysis, self-dialysis, and limited care dialysis. Regular (chronic) maintenance dialysis is the most common mode of treatment. Typically a patient undergoes dialysis treatments 2 or 3 times a week. Back-up dialysis is given to a patient under special circumstances in an environment other than the patient's usual dialysis environment. Acute dialysis is given to patients on an intensive care, inpatient basis. Acute dialysis is given to patients with ESRD during periods of acute illness and also to patients without ESRD who require dialysis for special conditions, such as acute renal failure or drug ingestion.

Self-dialysis is regular maintenance dialysis performed by a trained patient at home or within an outpatient facility. Professional supervision and performance of dialysis is limited. Limited care dialysis is regular maintenance dialysis on an out-patient basis in a facility where the actual dialysis procedure is performed by health professionals.

A dialysis service unit may fulfill one or more of the following functions:

1) Acute dialysis is given to correct acute metabolic problems arising from failure of kidney function, either with ESRD, or acute renal and may require the presence of a physician throughout the entire dialysis.

2) Inpatient hospital dialysis is given to hospitalized ESRD patients who are not hospitalized for metabolic abnormalities directly attributable to their renal failure. Dialysis is often much simpler in such a situation.

3) Outpatient maintenance dialysis is done in an outpatient setting by nurses or other health professionals.

4) Limited care dialysis is performed in an outpatient setting, but patients and health care professionals cooperate in performing dialysis. Patient participation is limited only by his understanding and abilities and the adaptability of the equipment.

5) Home dialysis is done in the home by a trained patient, usually with a family member or other helper. No health professional is present for most dialyses.

6) Training of personnel.

7) Research and development.

Kidney transplantation is a "process by which a kidney is excised from a live (family member) or cadaveric donor, and surgically implanted in an ESRD victim." [2] Nonrelated living donor transplantation is currently not practiced in this country.

Renal transplantation and chronic hemodialysis must be considered as complementing rather than competing modalities of treatment. Hemodialysis maintains patients with kidney failure until a suitable donor or cadaver kidney can be found. It also supports the newly-grafted organ in case of need, and serves as a life-support if the graft is unsuccessful. Many patients, for a variety of reasons, are not considered suitable candidates for transplantation and must be maintained for life on dialysis. Maintenance dialysis alone, however, without transplantation, would be an unfortunate single solution to the problem of kidney failure in all patients due to the need for continued, lengthy treatments (frequently 6-10 hours, 3 times a week), and because of the high lifetime costs of $7,000 - $9,000, up to $50,000 each year. There are many patients however, who prefer not to have a transplant if they are doing well on dialysis. The emphasis is not strictly on technique (whether a patient should be dialized or receive a transplant), but also on the rehabilitation of the patient.

Regionalization describes the major trend in end stage renal disease. Federal regulations, Public Law 92-603, Section 2991[3] requires that all facilities providing ESRD services be organized into coordinated systems (networks) for the delivery of care, to be eligible for Medicare reimbursement.

Programs conducted by Public Health Service and State Health Agencies during the past decade have demonstrated that integration of hospitals and other facilities into organized networks is the most effective way to deliver ESRD care.[4]

## 1.2 Geographic Boundaries

The State of Montana is serviced by the Federal End State Renal Disease Regional Network II, based in Seattle. Portions of northern Wyoming refer patients to Montana. Most candidates for transplants are referred to Seattle, Washington.

# 2.0 Background Trends

## 2.1 Incidence, Prevalence and Mortality

During the past decade the rapid development of two complementing therapies for irreversible kidney failure has changed the prognosis of patients with such conditions from certain death to reasonable likelihood of a meaningful life. Chronic hemodialysis has roughly a 90% annual survival rate.[5]

The incidence of end stage renal disease (irreversible kidney failure) is at least 50 new patients per million.[6] Approximately 1/4 to 1/2 of the patients with end-stage renal disease will be considered suitable candidates for transplantation.[7] The remainder must seek dialysis. Glomerulonephritis (characterized by damage to the structure of the nephron, principally the glomerular portion) accounts for approximately 40 to 60% of all patients in dialysis or transplant programs; however, more and more ESRD are patients with other complications, primarily diabetes. The major portion of the remaining 40 to 60% patients with ESRD have genetic renal problems, obstructive diseases, hypertensive renal disease (untreated hypertension leading to ESRD), diabetes mellitus, systemic diseases (systemic lupus erythematosus for example) tumors and congenital abnormalities. All of these may lead to ESRD. Prevention programs to detect and treat these diseases, as well as complete evaluation or referral by the primary physician who finds evidence of early renal diseases are essential, for several of the problems seen in ESRD may be available or reversed with therapy that is currently available.

Each patient requires systematic study. If it has been determined that conservative management (diet or drug program) is not adequate, that the kidney disease has progressed to the terminal or end-stage, dialysis and transplantation are the two treatments which may extend life. These two treatments are complementary rather than competitive.

## 2.2 Service Trends

Technical advances in the efficiency and safety of the "artificial kidneys" (chronic hemodialysis) have made it feasible to transfer the treatment of many stable patients to their homes, with a trained family member in attendance. Aside from the obvious cost reduction, the psychological and social benefits resulting from home treatment have led to the current emphasis on home training programs. Where chronic hemodialysis is the treatment of choice, home dialysis, in maintaining the patient within his normal social environment and in promotion his independence from illness-oriented hospital care, thus offering the patient the best treatment modality in rehabilitation to a productive and meaningful life. Not all patients will be candidates for home dialysis. Those persons living alone or without family support (physical, emotional, psychological and intellectual) as well as those who are too ill to manage at home are not likely home dialysis candidates. When both patient and partner work full time, center dialysis may be more convenient and less time consuming. If patient or partner has to quit work or go part time, it may not be economically feasible or desirable to go on home dialysis if a center is convenient. Therefore, facilities providing chronic services need to be available.

## 3.0 Service Guidelines and Criteria

ESRD treatment facilities themselves must meet various conditions and standards outlined in the regulations. Two major requirements are that the institution must be a member of the network and that it must meet minimum utilization rates for transplantation and dialysis to qualify for reimbursement for services rendered to ESRD patients. In addition to these requirements, the facility must address such issues as the establishment of governing bodies, the development of treatment plans for individual patients served by the facility and the provision of information to the Secretary of HEW.

In planning to meet the present and future needs of ESRD individuals, the cost, availability, accessibility, continuity, acceptability and quality of the service must be addressed.

### 3.1 Cost

In an effort to minimize cost, those who can be placed on (home) self-dialysis should be. The cost of care is significantly lower for self-dialysis than for other modes of treatment, however, Medicare does not reimburse for aid provided by family members and/or others aiding the patient who is dialyzed at home.

A facility proposing ESRD services should not represent an unjustifiable duplication of existing renal disease service resources. Existing maintenance dialysis units should be operating at or near a realistic functional capability (80 percent utilization of two treatment shifts per day, six days a week for dialysis)[8] before new units are undertaken.

### 3.2 Availability

Facilities providing ESRD services must assure that all modes of treatment and rehabilitation are available to all individuals with end state renal disease. Skilled medical and nursing staff, support service staff, adequate facilities and equipment must be available on a 24-hour basis. Specific arrangements to accommodate ESRD patients on dialysis (to coordinate dialysis so as not to conflict with the patient's job, for example) must be attempted.

The medical community must be educated to solicit kidney donors. The public must be educated to the importance of kidney transplantation as a treatment method and the desirability of donating kidneys for this purpose.

### 3.3 Accessibility

Providers should maintain established referral patterns to each of the four Montana facilities for dialysis and/or home treatment training. Referrals to the major transplant centers should be contingent upon the patients' needs.

a) some centers have more experience and/or better results with specific types of ESRD: an example - until recently, has been diabetes mellitus.

b) close friends or family near a transplant center can provide emotional help as well as a place for a patient's family to stay around the time of a transplant.

### 3.4 Continuity

The physician at the initial level of care who will be primarily responsible for initiating requests for consultation must be provided with the opportunity to participate in the patient's care as he or she moves through the regional system (dialysis - transplantation - home care).

Lines of communication between hospitals and physicians, hospitals and patients, transplantation centers and hospitals and physicians, must be established and maintained in such a way that consultation in all directions is readily available. Recently kidney associations have been developed to provide close communication and psychological support among ESRD individuals. This is a very valuable means of training as well as social and moral support for patients and its development must be encouraged. Clearly defined lines of communication must be established between hospitals and special community support services to provide proper follow-up on ESRD patients (both medical and social service follow-up).

### 3.5 Acceptability

The persons utilizing the ESRD services directly and indirectly (family and friends) should be treated on a personal basis with respect and dignity. Support services such as home care and social services (either through the hospital or connected agency) must work in close association with the facilities sponsoring ESRD services.

### 3.6 Quality

Renal support systems in Montana must maintain high quality standards in accordance with regulations set forth in detail in the Federal Regulations.[9] Some of these standards are:

- A chronic dialysis center providing non-hospital-based back-up support services primarily for patients on self-dialysis must be adequately constructed, equipped and maintained to insure safe and effective services. An attempt should be made so that at least 40 percent of the patients receiving dialysis will be self-dialysis patients.[10] This type of unit must be formally affiliated with at least one dialysis center and maintain a minimum staff of a physician-director with six months experience in chronic hemodialysis, a registered nurse, a licensed practical nurse or a technician, all who have had at least three months training at an established secondary or tertiary center. Consultative services by a medical social worker and nutritionist should be arranged by the unit as well as special support services such as a blood bank or laboratory.

- The general acute hospital should provide comprehensive diagnostic, therapeutic and rehabilitative services to acute and end state renal disease patients. The unit within the hospital trains personnel in maintenance dialysis and conducts patient training in self-dialysis. This dialysis unit must be under the direction of a physician with extensive experience in nephrology, particularly end stage renal disease. Continuing education in ESRD, the training of patients in self-dialysis and training of registered and practical nurses and technicians in acute and maintenance hemodialysis should all be program components of the unit. A medical review board should be established to review all ESRD activities, this is currently being established through the ESRD network. Specific optimal criteria for dialysis centers are delineated in detail in the Federal Register[11] with the recommended number and types (full or part-time) of individuals involved in the total care of the ESRD patient within a hospital-based dialysis facility.

## 4.0 Description of the Present Situation

At present, there are four acute general hospitals in Montana which provide ESRD care. Hemodialysis units are located in St. Patrick's Hospital in Missoula, St. Peter's Hospital in Helena, Columbus Hospital in Great Falls and Billings Deaconess Hospital in Billings. All four provide hemodialysis on both an acute and chronic level. Missoula, Helena, Great Falls (Columbus and Montana Deaconess Hospitals) and Billings provide peritoneal dialysis services, and Helena and Billings provide home dialysis training.

Over the past two years all four of the hospital-based ESRD units have performed a significantly greater number of

TABLE 1

ESRD UNIT INVENTORY

1977

| | St. Patrick's | St. Peter's | Billings Deaconess | Columbus |
|---|---|---|---|---|
| Total number of Hemodialysis Stations | 2 | 2 | 5 | 3 |
| Average of potential operating time: 12 hrs/day x 6 days/wk | 144 | 144 | 360 | 216 |
| Total number of patients | 3 | 8 | 14 | 12 |
| Average treatment time: 6 hrs/day x 3 days/wk | 54 | 144 | 252 | 216 |
| % Utilization | 37% | 100% | 70% | 100% |

TABLE 2

PROJECTED ESRD INCIDENCE RATES

| | STATE | NORTH WESTERN | SOUTH WESTERN | SOUTH CENTRAL | NORTH CENTRAL | EASTERN |
|---|---|---|---|---|---|---|
| 1976 Est. Population | 752,500 | 174,700 | 179,800 | 151,200 | 147,100 | 99,700 |
| # New ESRD Patients | 37 | 9 | 9 | 7 | 7 | 5 |
| # Potential ESRD Stations (85% total) | 19 | 5 | 5 | 4 | 4 | 3 |
| # Potential Home Dial. Patients (40% total) | 15 | 4 | 4 | 3 | 3 | 2 |
| # Eligible for Transpl. | 15 | 4 | 4 | 3 | 3 | 2 |
| # Home Dialysis (total after tranpl. 40%) | 9 | 2 | 2 | 2 | 2 | 1 |
| 1985 Est. Population | 859,728 | 206,093 | 205,798 | 180,819 | 156,766 | 110,252 |
| # New ESRD Patients | 50 | 14 | 13 | 9 | 9 | 5 |
| # Potential ESRD Stations (85% total) | 25 | 7 | 7 | 5 | 5 | 3 |
| # Pontential Home Dial. Patients (40% total) | 20 | 6 | 5 | 4 | 4 | 2 |
| # Eligible for Transpl. | 20 | 6 | 5 | 4 | 4 | 2 |
| # Home Dialysis (total after tranpl. 40%) | 12 | 3 | 3 | 2 | 2 | 1 |

dialysis treatments. In 1974, the combined total number of treatments for all four hospitals was 620; in 1976 this had increased to 2,841. This is an increase of 358 percent. This increase may be attributed to several things; the presence of a nephrologist in the area, increased knowledge by providers and consumers that one need not be left to die if one develops ESRD, and Medicare financial subsidization.

Table 1 explains the present status and utilization levels of each of the hospitals. This information is for the one month period of January 1 to January 31, 1977.

Optimal utilization (when occupancy reaches 80 percent on two shifts per day)[12] needs to be met before additional facilities are added or current services expanded.

4.1 Problems

Because of the complexity of renal disease and its involvement with other diseases it is often difficult to determine who should receive transplants, versus dialysis. What criteria should be employed in selection, who should make the choice, how involved should the patient be and how to determine how medically unsuitable a patient is, are all specific problem questions that must be addressed by the patient, attending physician and the physicians at the regional centers.

The cost of a well developed network is high, as well as the cost of training, continuing education workshops, outreach and preventive programs. The cost of dialysis service is very high. Although Medicare protection has been extended to ESRD patients for dialysis or transplantation there are certain restrictions on entitlement periods and provisions for the sharing of costs by patients.

Medicare coverage provides a disincentive for and apparent access barrier to (home) self-dialysis. Institutional dialysis is more attractive than home dialysis under the present ESRD program for physicians and patients, since physicians are reimbursed more for caring for a patient in the dialysis unit than for care of a home patient, and since certain expenses in home dialysis are not covered. The proportion of patients treated by home dialysis in the United States has declined significantly since the beginning of Medicare coverage under the ESRD program.

5.0 Estimate of Service Requirements

In estimating the number of dialysis beds needed within the next ten years, several assumptions can be made, namely;

- Each year, at least fifty (50) new patients out of every million persons will develop end stage renal disease.[13]

- Patients who have a living donor will be transplanted during the first year in which they enter a dialysis-transplant program. Their average waiting time will be four months after starting dialysis.[14]

- Forty percent of all ESRD patients are candidates for transplantation.[15]

- Forty percent of the dialysis pool at the end of a given year can be placed on home dialysis. The remaining sixty percent then will remain on center dialysis.[16] Some authorities suggest that as many as 85 percent are eligible for home dialysis.

Despite an increase in the number and size of chronic hemodialysis facilities, the demand for these services is expected to continue to rise. As early access to the medical care system improves and financial constraints are relieved, the year-to-year carry-over added to the annual incidence will yield a slower rate of growth. Until transplantation can match up with the present and growing backlog, this growth is expected to continue.

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## BURN CARE

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The primary goal of the Health Systems Plan is to encourage the development of systems to deliver the highest quality burn care possible to Montana residents.

Whether or not the establishment of a formal network for the referral of burn care patients improves their outcome is debatable. Nevertheless, attempts to improve the local medical and nursing skills in treating any type of patients should never be discouraged. Consequently, those facilities with 24 hour emergency staff might consider establishing local burn teams to assist attending physicians upon request.

In concert with this goal, the following recommendations are suggested:

1) At the present time, the need for establishing burn care centers in Montana does not appear to exist.

2) Hospitals serving as regional emergency medical centers in Montana should attempt to develop burn teams and burn programs to assist the attending physician (if requested) in caring for burn patients.

3) Burn units/centers serving Montana residents should be encouraged to develop an air ambulance capability for the transfer of severely burned patients.

# BURN CARE

## 1.0 Service Description

Most patients with burns serious enough to require hospitalization require a great deal of special attention by the hospital staff. Because they have lost some of the protective and regulatory functions of their skin, they are particularly susceptible to infections, fluid loss, metabolic disorders and other complications.

Some authorities have advocated that the most efficient and economical way to provide the highest level of care for burn victims in an organized way is to provide a stratified system of burn care facilities. The purpose of these guidelines is to present the pros and cons for setting up such a system in Montana and to specify guidelines if one were to be established. The geographical base for these guidelines will be the entire state of Montana.

In the current system of delivering health care, most burn patients are treated locally by their attending physician. Because of their susceptibility to infection, they are often placed in intensive care units.

In contrast, the American Burn Association has hypothesized that burn victims might be treated in four separate settings within a structured multi-level system.[1] They are:

- Burn Units/Centers are hospitals possessing indepth expertise and optimum facilities for burn care. At the present time, units are normally found in hospitals of 500 beds or more and are usually affiliated with a medical school. Typically, a group of four, six or twelve beds, depending on the demand, are maintained in these facilities specifically for the use of severely burned patients. In addition, these hospitals have the capability to deliver all therapy and rehabilitation services required by burn victims. Besides caring for burned patients, personnel in these units usually devote a substantial proportion of their time to teaching, training personnel, and burn research.

- Burn Programs are found in hospitals with special expertise in burn care. Such programs would be capable to treat burns of moderate severity, provide emergency care, serve as a referring center for more severe burns, and provide some rehabilitative care. Burn programs would not typically have beds specifically set aside for burn patients but rather use ICU or ICU/CCU beds for initial hospitalization.

- Hospital Emergency Departments would be used to treat minor burns, provide emergency care for moderate and severe burns and refer patients to more sophisticated facilities.

- Emergency Treatment at the Site of the Accident should be provided by EMT personnel with appropriate training.

The American Burn Association suggests that these four settings can be combined into a burn care system by fostering communication and cooperation among the personnel found in each of these settings. Because burn injury can be readily measured as a percent of body surface area, the severity of the burn can be fairly easily recognized and triage to hospital facilities appropriate to individual needs can be expedited.

One of the keys to such a system is the supporting transportation network. It has been suggested that although most burn patients can be moved successfully in the first 24-48 hours after being injured, the sooner he or she is moved, the easier it is to transport him to a burn facility. In general, the patient can ride comfortably and safely in a surface ambulance capable of providing advance life support on route for as much as 90 minutes.[2] If the estimated transport time is much longer than this, arrangements should be made to air transport the patient.

There are two arguments against encouraging the development of a system specifically for burned victims. First, whether or not patients' outcomes are better and complications less when treated in a burn unit/center has not been established. The only definitive study to date was conducted in 73 Florida hospitals. It concluded that "patients in hospitals with specialized facilities for burn care never did significantly better statistically in mortality and morbidity than patients in hospitals without such special facilities. Costs, loss in revenue, and length of stay, on the other hand, were markedly greater in hospitals with burn units or programs.[3] Secondly, the establishment of such a system implies that much of the local physician's ability to determine what is best for his patient is taken away from him. Consequently, local physicians who feel capable of treating burn victims themselves will be reluctant to cooperate with a system imposed upon them.

## 2.0 Background Trends

### 2.1 Incidence, Prevalence and Mortality

At the present time there are no reliable and precise estimates of the incidence of severe burns in Montana. Gross estimates can be obtained by two indirect methods. If one assumes that Montana statistics are similar to national figures, then it can be estimated that there were roughly 267

Montana residents who were hospitalized for burns in 1975. (Nationally, it has been estimated that one in every 2,800 persons, or 0.357 per 1,000 population, will be hospitalized for burn injuries each year).[4]

On the other hand, mortality statistics can be used to get crude estimates of incidence. The number of burn related deaths in the state for 1971 through 1975 are shown in Table 1. For this period, an average of 26 persons died from burns each year in Montana.

A Burn Care Committee for the Wisconsin Regional Medical Program estimated that 30 percent of the severe burns treated in hospitals failed to survive.[5] Using this rule of thumb, one can estimate that 87 persons are severely burned.

One of the problems, however, with using mortality statistics is that they do not differentiate those persons who died at the scene with those who reached the hospital and subsequently succumbed. Thus, even if the 30 percent estimate is reasonable, the estimated incidence is probably high.

The disparity between these two numbers (roughly 150 percent) accentuates the need for more precise estimates on the incidence of burn injuries. Up to this time, information on the annual number of persons in Montana who are burned and require hospitalization has not been collected and summarized. Local ambulance services and emergency rooms are currently being encouraged by the state's Emergency Medical Services (EMS) Bureau to complete an encounter form for each person treated. However, estimates based on this data are not yet available.

Nationally, the primary cause of burn injuries varies among age groups. Scald burns are most common in youngsters under three years of age Between the ages of three and fifteen, the preponderance of major burns are caused by the misuse of fire and matches. In adults, burns are primarily home, automobile and industrial accidents.[7] In Montana, 83 percent of the burn related deaths between 1971 and 1975 were among adults fifteen and older; 37 percent of them were persons over 64 years of age. Most burn related deaths were the result of house fires.[8]

## 2.2 Service Trends

The concept of a facility or unit specializing in burn treatment was advanced by Feller and Crane in their 1971 pamphlet. At that time. they described a triage for burn patients in Michigan interlinking facilities with different levels of burn expertise.[9]

| YEAR | NUMBER OF DEATHS | CRUDE MORTALITY RATE PER 1,000 POPULATION |
|---|---|---|
| 1971 | 26 | 0.037 |
| 1972 | 31 | 0.043 |
| 1973 | 26 | 0.036 |
| 1974 | 17 | 0.023 |
| 1975 | 32 | 0.041 |
| TOTAL | 132 | 0.036 |

TABLE I - Deaths in Montana from Accidents Caused by Fire and Flames

SOURCE: Reference 6

The Emergency Medical Services System (EMSS) Act of 1973 (Public Law 93-154) has specified that EMS programs should address critical patient categories which include the handling of burn victims. To this end, most emergency medical service bureaus have attempted to develop a vertical categorization of facilities which indicate their capabilities to treat patients with severe burns. At the same time, they are encouraging facilities to draft cooperative agreements with burn centers outlining the procedures to be used in the transfer of patients.[10]

One of the most important trends with respect to planning future burn care units/centers is that the average length of stay of burn patients appears to be decreasing. In 1969, PAS hospitals in the Western United States reported an average length of stay of 13.5 days for hospitalization patients with burns; 50 percent of the patients stayed seven days or less.[11] In 1975, the average length of stay was reduced to 10.9 days and 50 percent of the patients were released by the sixth day.[12] It should be noted, however, that these numbers contain a minor burn which would not normally require the services of a burn team.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Institutions wishing to set up a burn unit/center specifically for the treatment of burned patients should understand that few such units are self-supporting. The Hospital Survey Committee of Philadelphia has estimated that a typical six-bed burn unit should expect to absorb an annual operating loss of about $50,000.[13] For this reason, hospitals undertaking this service must give evidence of a sound financial condition with which to absorb the expected operating losses.

Experts have indicated that 25 patients per year are required to justify a formal burn program outside of a burn unit/center. In such a program, it has been recommended that at least three (3) ICU or ICU/CCU beds be available for burn patient care.[14]

### 3.2 Availability and Accessibility

Facilities being reviewed and desiring to set up a burn program should attempt to make these services available and accessible to all who need them. They should show that the team will be supported by a substantial number of area physicians who will be expected to refer to them. The team should also show evidence of developing standing orders for transferring the more severely burned patients to regional burn units/centers when and if necessary.

3.3 Continuity

Proposed burn programs being reviewed should be under the direction of a physician interested in leading the burn team. Treatment protocols and standing orders for routine procedures should be established to facilitate the formal direction of this team.[15]

After recovering from the burn itself, the patient may have to undergo a number of rehabilitative, psychological and surgical procedures before achieving full recovery. Consequently, provisions should be made by the director of the burn team to give the patient's primary physician a clear idea of the patient's disability; what measures have already been taken to help in rehabilitation and reintegration and what further treatments are planned in the future.[16]

3.4 Quality

Burn Programs proposing to be developed in concert with an intensive care unit or a combined intensive/cardiac care unit, should be directed by a board certified general or plastic surgeon with experience and dedicated interest in burn care. Three months specialized training in burn care is desirable. The nurse in charge should have six months ICU experience and, if possible, three months burn nursing experience. A licensed physical therapist with splinting experience is also required.[17]

Such proposed programs should have a written plan for burn therapy including isolation techniques and patient transfer procedures to deliver optimal care. Additional criteria dealing with hospital organization, the availability of other medical specialists, the presence of other specialized facilities and equipment, nursing training requirements quality assurance programs, and continuing education requirements are outlined in the guidelines prepared by the American Burn Association.[18]

4.0 Description of the Situation

4.1 Inventory and Utilization Levels

Currently, there are no hospitals in Montana possessing a burn unit/center. The nearest facilities with these capabilities are located in Seattle, Washington; Salt Lake City, Utah; Denver, Colorado; and Minneapolis, Minnesota. How many Montana residents are treated for burns in these facilities each year is not known at this time. The University of Utah Medical School's Burn Unit has a federal grant to provide air ambulance services to Montana as well as to other mountain states.

St. Vincent's Hospital in Billings is the only hospital which has established a burn team and a formal burn program. This was started in September, 1976. Participation in the program is voluntary; attending physicians may request the burn team's assistance for their burn patients. The physicians on the burn team act as consultants and the attending physician retains overall responsibility.

Although statistics indicating the number of patients treated by the burn team at St. Vincent's is not yet available; about 77 burn patients were treated at the hospital during the two years before the establishment of the team.

Montana Deaconess Medical Center in Great Falls is in the process of developing a burn program around an expanded ICU capability currently under construction. No statistics are yet available on the number of burned patients to be treated annually by this program.

## 4.2 Problems

No indepth studies of the incidence of severe burns in Montana or the referral patterns for burn patients have been conducted. This limits the ability to plan for the development of more sophisticated burn treatment programs within the state. In addition, the effectiveness of formal burn referral networks can be questioned. Until definitive studies are conducted, physicians may be reluctant to participate in them.

## 5.0 Estimates of Service Requirements

The projected need for ICU beds in burn programs in Montana for 1976 and 1985 is presented in Table 2. These estimates were calculated using a methodology suggested by Feller and Crane.[19] The following assumptions are implicit in this methodology:

1) Approximately one person out of every 2,800 will, each year have a burn accident requiring hospitalization. (Based on Feller's data for 1965-1969 from the U.S. Public Health Service, the Commission on Professional and Hospital Activities, and the National Burn Information Exchange, Ann Arbor, Michigan).

2) The average length of stay for burn patients is 10.9 days. (Based on 1975 statistics from the Commission on Professional and Hospital Activities).[20]

| | STATE | NORTH WESTERN | SOUTH WESTERN | NORTH CENTRAL | SOUTH CENTRAL | EASTERN |
|---|---|---|---|---|---|---|
| Estimated 1976 Population | 752,500 | 174,700 | 179,800 | 147,100 | 151,200 | 99,700 |
| Estimated Seriously Burned Patients | 269 | 62 | 64 | 53 | 54 | 36 |
| Expected Avg. Daily Census for Burned Patients | 25 | 6 | 6 | 5 | 5 | 3 |
| Expected Daily Census in Local Burn Programs | 11.6 | 3 | 3 | 2 | 2 | 2 |
| # of ICU Beds Required for Burn Pts | 14.5 | 3 | 3 | 3 | 3 | 2 |
| Estimated 1985 Population | 859,728 | 206,093 | 205,798 | 156,766 | 180,819 | 110,252 |
| Estimated Seriously Burned Patients | 307 | 74 | 73 | 56 | 65 | 39 |
| Expected Avg. Daily Census for Burned Patients | 28 | 7 | 7 | 5 | 6 | 4 |
| Expected Daily Census in Local Burn Programs | 13 | 3 | 3 | 2 | 3 | 2 |
| # of ICU Beds Required for Burn Pts | 17 | 4 | 4 | 3 | 3 | 2 |

TABLE 2 - Estimated Number of ICU Beds Needed for Burned Patients in Montana in 1976 and 1985.

NOTE: The sum of the subarea requirements may not add to the state requirements due to rounding error.

3) About 47 percent of the burn patients are hospitalized in local burn programs; the remaining 53 percent are referred to burn units/centers. (Based on Feller's data).

4) A burn unit should maintain an 80 percent occupancy rate in allocating beds. (Based upon experience of the University of Michigan Burn Center).

Based upon the estimates in Table 2, it appears that no subarea can justify the establishment of a burn unit/center which can support more than five specialized beds. (See Section 1.0). A statewide unit is also infeasible because of the immense area involved. A unit should serve an area within 90 minutes by ambulance (See Section 3.2), and no two subareas, when combined, can satisfy this criterion. If air ambulances are used, the patient can just as easily be transported to burn units/centers outside the state which have already been established.

Although the estimated requirements for burn programs in Montana are minimal, it is suggested that hospitals with 24 hour emergency room coverage and an ICU or CCU/ICU capability consider establishing burn teams to be available to the medical staffs wishing to use them. As mentioned previously, St. Vincent's Hospital in Billings already has established such a program and Montana Deaconess in Great Falls is in the process of doing so.

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## POISON CONTROL

### GOALS, OBJECTIVES AND RECOMMENDATIONS

1) The poison control capabilities of each of Montana's hospitals should be identified and included in the statewide Emergency Medical Systems hospital categorization process. At least Missoula, Great Falls and Billings should maintain secondary treatment facilities. Every hospital in the State should have at least primary poison treatment capabilities.

2) Only one subregional poison information center should be located in Montana; it should have a single toll-free statewide telephone number and should be located with or near a secondary treatment facility.

3) The Montana subregional poison information center should provide public poison prevention education and training in poison treatment to hospital staffs throughout the State.

4) Hospitals and others treating poisoned patients should report the poisoning to the subregional center, which should, in turn, report all poisoning to the National Clearinghouse for Poison Control Centers.

5) The Montana subregional poison information center should be supported by public funds.

6) Pharmacists, physicians, nurses and others with toxicology knowledge should cooperate in the development and operation of Montana's poison control system.

# POISON CONTROL

## 1.0 Service Description

### 1.1 Definition

All patients with exposures to or toxic manifestations of drugs or other chemicals require some kind of poison control. This includes patients who have been accidentally poisoned or who are experiencing the toxic effects of drug abuse, intentional drug overdose, or drugs given for therapeutic purposes.[1]

Poison control has four major facets: prevention, information, laboratory analysis, and treatment.

Prevention consists of activities such as safety packaging and labeling, and consumer education. The purpose of information and laboratory analysis is to help determine the proper treatment. Information about the toxic effects of and proper antidotes for various drugs and chemicals must be collected and stored so that it is readily available when a poisoning occurs. When a toxic substance is unknown or a severe poisoning requires continual monitoring, the back-up of a toxicology laboratory is necessary.

Poisoning treatments depend on the type of poisoning and how severe it is. Some of the most common treatment forms include inducing vomiting, administering antidotes, administering demulcents or soothing agents, lavage or irrigation. More severe poisonings sometimes require administration of intravenous fluids, cardiopulmonary resuscitation, renal support or other specialized care.

One way to manage poisoned patients is through a system which coordinates the four poison control components listed above. Following is an outline of a poison control system including five levels of treatment services and two levels of information services:[2]

- Home Management can be appropriate when the poisoning is asymptomatic or only mild symptoms are expected or exhibited. Home treatments include initiation of simple irrigation, administration of soothing agents, or induction of vomiting by someone at the poisoning scene.

- Basic Treatment Facilities are emergency areas staffed by personnel able to recognize a poisoning emergency, initiate physiologic life support and arrange, if necessary, the rapid and safe transfer of the patient to an appropriate definitive care facility. Basic facilities can treat patients who require the help of trained personnel, but who do not require hospitalization.

- Primary Treatment Facilities treat patients whose poisonings are readily reversible by vomiting, antidotes or lavage and who do not require admission to intensive care units or respiratory or analytical laboratory support. Primary facilities must have an emergency room and in-patient observation beds.

- Secondary Treatment Facilities treat poisoned patients who are expected to respond to care such as respiratory support and non-dangerous antidotal therapy. The patients treated at these facilities need only periodic follow-up by analytical laboratory observations. Secondary facilities must have an emergency room, in-patient observation beds, limited laboratory capabilities, and an intensive care unit, with appropriate support personnel.

- Tertiary Treatment Facilities provide comprehensive poisoning treatment services, a full range of toxicology laboratory services and transportation of critically ill patients to tertiary facilities. Severely poisoned patients who require dangerous antidotal therapy, hemodialysis, constant analytical laboratory monitoring, and/or multidisciplinary physician support are handled at the tertiary level.

At every treatment level, written referral procedures and treatment protocols should be established and a poison control information center should be consulted. The two levels of information services are:

- Regional Information Centers provide comprehensive poison information and consultation to health professionals and consumers, a communications system adequate to ensure rapid reception and transmission of information to the entire area served, professional and public education programs and collection and dissemination of poisoning experience data. Regional Information Centers are usually co-located with tertiary treatment facilities and may serve a city, part or all of a state, or several states, depending on the target population.

- Subregional Information Centers are an arm of the regional information center and serve as a filter for the less severe and less difficult calls in their areas. They are the initial contact points for the public and health professionals in their areas, but the regional center is consulted when necessary. Written referral agreements are established to show which calls are handled at the subregional level and which are referred to the regional center. Direct communication links, such as toll-free telephone lines and telecopiers, are established between the two centers. Subregional personnel are trained by regional center personnel.[3]

## 1.2 Geographic Boundaries

These guidelines are being developed for the entire state of Montana, but they also affect the Intermountain, Rocky Mountain and Pacific Northwest areas currently being serviced by poison control centers in Salt Lake City, Utah; Denver, Colorado; Spokane, Washington; and Seattle, Washington.

# 2.0 Background Trends

## 2.1 Incidence, Prevalence and Mortality

Obtaining reliable poisoning data is a problem because no comprehensive poisoning reporting system exists.

The Food and Drug Administration, National Clearinghouse for Poison Control Centers,[4] reported that 170,730 poisonings occurred in 1975, resulting in 194 deaths. This data is based on reports voluntarily submitted by poison control centers. The numbers are notably low; considering that Montana alone had 36 poisoning deaths in the same year.

An annual survey of a sample of U.S. hospital emergency rooms[5] resulted in estimates that 175,365 consumer-product related poisonings were treated in hospital emergency rooms during 1976. The surveyors estimated that 38 percent of all emergencies are treated at emergency rooms, with 41 percent treated by doctors, 18 percent treated at home and 3 percent treated as hospital inpatients. Therefore, it can be estimated that approximately 460,000 consumer-product related poisonings occurred in 1976. However, the number managed at home, with supervision from poison information centers, may be considerably higher than these estimates. Data from major regional poison information systems indicates that approximately 80 percent of poisonings in their areas are managed at home.[6]

Another estimate[7] is that five million poisonings occur each year in the United States, resulting in more than 5,000 deaths. This means that 0.1 percent of all poisoned individuals die as a result of that poisoning. Assuming a U.S. population of 200 million, these figures translate into 25,000 poisonings and 25 poisoning deaths per million population.

Although figures on the number of poisonings in Montana are not available, figures on poisoning mortality are available for the years 1971-1975 (Table 1). The average number of poisoning deaths in Montana over that five year period is 37.8, with an average population of 723,400. That translates roughly into 52.5 poisoning deaths per million population. Using the above mortality per poisoning rate of 0.1 percent, Montana had an estimated 52,500 poisonings per million population. This means that either Montana has more poisonings than the rest of the Nation, that the previous incidence figures are low, or that the poisoning death rate is actually greater than 0.1 percent.

TABLE 1

POISONING DEATHS IN MONTANA 1971-1975

| Year | Accidental Poisonings | Self-Inflicted Poisonings | Total Poisoning Deaths | Population |
|---|---|---|---|---|
| 1971 | 32 | 27 | 59 | 694,409 |
| 1972 | 9 | 9 | 18 | 719,000 |
| 1973 | 19 | 12 | 31 | 721,000 |
| 1974 | 26 | 19 | 45 | 735,000 |
| 1975 | 14 | 22 | 36 | 748,000 |
| 5-year average | 20 | 17.8 | 37.8 | 723,482 |

*Taken from Montana Vital Statistics, State Department of Health and Environmental Sciences, The Bureau of Records and Statistics, Helena, Montana.

Following are some other important poisoning statistics:[8]

- Ninety (90) percent of the total reported poisonings involve children, making poisoning the most common pediatric medical emergency.

- Poisonings are the fourth most frequent cause of accidental deaths, with only motor vehicle accidents, drownings and burns being more frequent.

- Poisonings are responsible for 10 percent of all emergency room visits, and 5 to 10 percent of all medical admissions.

- Ninety (90) percent of hospital admissions and deaths related to poisonings come from intentional or industrial poisonings in adults.

## 2.2 Service Trends

During the past several decades, a large number of new chemicals, new household products and new drugs have been introduced, creating a greater threat of poisoning. Because of the quantity of products and their newness, physicians are not always familiar with their characteristics or toxic effects. This creates a need for a central, readily available source of data on potential poisons. The poison control center concept was developed to meet this need. Since the first poison control center was established in Chicago in 1953, more than 600 such centers have opened in the United States.[9] Their development and operation has been haphazard, as is shown by a survey of 417 of these facilities.[10] The survey, completed in September 1976, showed that most of the centers are located in a hospital emergency department, with most of the poison calls being handled by nurses who are not full-time poison control specialists. Most of the poison control centers are not involved in poison prevention education and most did not operate on specific annual budgets. More than 75 percent handled less than three calls a day.

All of this results in inefficient poison control, bringing many poison control experts to advocate a network of regional poison information and treatment centers.[11, 12, 13] They feel that these centers should stop duplication and provide more expert poison control. The current trend is to reduce the number of poison control centers in the United States to 50 or 60, all at a regional level.

The two major trends in poison treatment are toward stratification of treatment facilities and toward more home management.[14] A stratified system of treatment facilities allows for pooling highly specialized and expensive resources and establishes referral patterns for poisoned patients. Home management, under the direction of a poison information center,

can often allow a quicker reaction to a poisoning, and therefore, promotes better care. Because it cuts down on the number of emergency room and physician office visits, home management saves the consumer money. A survey of regional poison information centers already in existence showed that more than 80 percent of all poisoning incidents called into the centers were treated effectively at home, with telephone supervision.[15]

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Because people calling for poison information should not be expected to pay for those calls on a fee-for-service basis, poison information centers should be considered a public service and should be funded with public monies. To provide the most comprehensive and cost-efficient service, poison information should be provided by regional or subregional centers. The average regional poison information center, serving from 2 to 5 million people, has an annual operating cost of $150,000 to $200,000.[16] A subregional center will have annual operating costs of approximately $80,000, based on 5,000 to 10,000 calls a year.[17] These costs include personnel, communications (WATS lines and telecopiers) and education expenses.

Assuming that treatment facilities already have back-up services such as emergency departments, intensive care units, hemodialysis units, etc. (according to the level of care offered), poison treatment costs would include those for toxicology laboratory services not offered by existing laboratories and drugs necessary to treat poisoned patients.

A complete range of toxicology laboratory services, offered at the regional level, would cost an estimated $600,000 annually, plus approximately $350,000 initially for capital equipment. A secondary level toxicology laboratory would cost an estimated $250,000 annually, plus $150,000 to $200,000 initially for capital equipment. A laboratory capable of handling only basic toxicology procedures (i.e., blood alcohols, salicylates, minimal screening to establishing diagnosis or poisoning) would cost approximately $50,000 to $60,000 annually, plus approximately $25,000 initially for capital equipment.[18]

Drug costs at the various treatment levels are estimated at:[19]

- Home management - $4 for a pint of syrup of ipecac.
- Basic Treatment Facilities - $30.
- Primary Treatment Facilities - $100-$125.

- Secondary Treatment Facilities - $250.

- Tertiary Treatment Facilities - $600.

3.2 Availability[20]

- Poison Control Information Services must be available to the public and to health professionals 24 hours a day, 7 days a week.

- Basic Treatment Facilities must be available on an on-call basis 24 hours a day, 7 days a week.

- Primary Treatment Facilities must be available 24 hours a day, 7 days a week, with 24-hour emergency and in-patient nursing coverage, a 24-hour on-call pharmacist; 24-hour on-call physicians and a 24-hour on-call laboratory technician.

- Secondary Treatment Facilities must be available 24 hours a day, 7 days a week, with 24-hour emergency, in-patient and intensive care nursing coverage; 24-hour pharmacy coverage in-house; 24-hour on-call specialty consultant physicians; 24-hour in-house laboratory services capable of performing a hemogram, urinalysis, serum electrolytes, serum chemistries and blood gases. In addition, secondary facilities should have access within four hours to analytical toxicology services providing drug screens and quantitative salicylates, barbiturates and alcohol. Other analytical services should be available within 24 hours and inhalation therapy (respiratory care) must be available on a 24-hour basis.

- Tertiary Treatment Facilities, in addition to the secondary treatment facilities availability, should have 24-hour specialty consultants (limited) in-house and an on-call clinical toxicologist. Both limited and comprehensive drug screens should be available within two hours and laboratory services providing quantitative levels of all agents, where methodologies are known (minimum list includes salicylate, barbiturate, alcohol, acetaminophen, iron, digoxin, sedatives, RBC cholinesterase, heavy metals), are available within four hours.

3.3 Accessibility

Poison information services should be accessible to the public and to health professionals. Services should include a toll-free, widely publicized telephone number strictly for poison information calls.

In sparsely populated areas, such as Montana, it may be infeasible to have a full range of poison control services within a convenient distance from the patient's home. Therefore, an emergency transportation system equipped to handle poison patients is necessary to ensure the best possible accessibility of care.

3.4 Continuity

In order to ensure continuity of care, subregional centers should be able to transfer calls directly to regional centers and a telecopier should be available to transfer information from one regional center to subregional centers, and vice versa. Poison control information centers and treatment facilities should have established referral patterns and transfer procedures for poisoned patients. In addition, poison control information centers should, at periodic intervals, follow up each poison call they receive to check the patient's progress and to ensure that information given was understood.

Poison control should be coordinated with other emergency medical systems. This should include a defined relationship between single access emergency numbers (such as 911) and poison information numbers. Also, poison treatment capabilities (tertiary, secondary, primary, basic) should be included in the EMS hospital emergency categorization process.

Poison control treatment facilities and private physicians treating poisoned patients should report all poisonings to the regional or subregional poison information centers, who should in turn report them to the National Clearinghouse for Poison Control Centers, in order to assist in the compilation of poison information.

3.5 Quality

Poison Information

Regional Poison Information Centers

a. Resource Materials - All the basic toxicology information resources available, access to the available texts and journals dealing with toxicology, and ready access to a medical library. Information should include Poisindex, National Clearinghouse card files, and similar sources.

b. Personnel - In addition to a consulting staff from tertiary treatment facilities, a regional poison information center should have nurses or pharmacists trained to receive poison calls, use information resources, perform follow-up calls, and obtain the proper consultation.

c. Proficiency - A regional poison information center should receive approximately 1,000 calls per month[21] and periodic reviews should be conducted to ensure that calls are being handled properly.

Subregional Poison Information Centers

a. Resource Materials - Ready access to a medical library, standard textbooks on poisonings, Poisindex or Toxifile or some other frequently updated card or microfilm resource, plus written treatment protocols.

b. Personnel - A medical director, a clinical pharmacist or a physician knowledgeable in toxicology, nurses or pharmacists trained to handle poison calls, and specialty consultants at either the subregional or regional level.

c. Proficiency - To maintain proficiency, subregional staffs should have periodic training sessions with regional center personnel. Subregional staffs should continually consult with regional staffs. Periodic reviews should be conducted to ensure that calls are being handled properly.

Treatment

Home Management[22]

a. Personnel - A public trained in basic life support and in where to call for help for poisoned patients.

b. Transportation - Ready access to local Emergency Medical Services (EMS) system.

c. Drugs - Syrup of ipecac.

d. Proficiency - Home management should be conducted under the direction of a poison information center.

Basic Treatment Facilities[23]

a. Personnel - Staff able to recognize a poisoning emergency, initiate physiologic life support and arrange, if necessary, the rapid and safe transfer of the patient to an appropriate definitive care facility.

b. Transportation - Access to surface and air ambulance services, as well as established transfer protocols.

c. Drugs - Atropine, naloxone, oxygen, activated charcoal, syrup of ipecac.

d. Proficiency - Personnel should have periodic training sessions in handling emergency situations, including poisonings.

Primary Treatment Facilities[24]

a. Personnel - Emergency and in-patient nurses, pharmacists, physicians and laboratory technicians.

b. Transportation - Same as basic facilities.

c. Drugs - In addition to those at basic facilities, primary facilities should have sodium or magnesium sulfate, cyanide antidote kit, sodium bicarbonate and calcium gluconate.

d. Proficiency - In addition to the laboratory capabilities listed under the availability guidelines, primary treatment facilities should be capable of emesis induction, gastric lavage, topical lavage, or decontamination of the skin or eye, administration of activated charcoal, catharsis, intravenous fluid therapy, resuscitation and antidotal therapy (restricted).

Secondary Treatment Facilities[25]

a. Personnel - Emergency, in-patient and intensive care nurses and physicians; pharmacists, specialty consultant physicians, laboratory personnel.

b. Transportation - Same as basic facilities.

c. Drugs - At a minimum, secondary facilities should have all the drugs primary facilities have, plus apomorphine, alcohol, 50% or 90%, diphenhydramine, physostigmine, chlorpromazine, diazepam, vitamin K and methylene blue. In areas such as Montana where more specialized drugs are unavailable within a short period of time, it may be desirable for secondary facilities to adapt their drug lists to their area. For example, in Montana it is highly desirable for hospitals to have rattlesnake antivenins.

d. Proficiency - In addition to the laboratory capabilities listed under the availability guidelines, secondary treatment facilities should be capable of providing the same services as primary facilities, plus diuresis, peritoneal dialysis, and intensive care cardiopulmonary support and monitoring.

Tertiary Treatment Facilities[26]

a. Personnel - Emergency, in-patient and intensive care

nurses and physicians, specialty consultants (limited), pharmacists, clinical toxicologist, sub-specialty consultants, laboratory personnel.

b. Transportation - Tertiary treatment facilities, working in conjunction with regional poison information centers, should provide transport teams which can transfer poisoned patients from outlying areas to tertiary facilities when necessary. Transfer protocols should be established at the local level. Tertiary facilities should be responsible for ensuring that the emergency transportation system includes all personnel and equipment necessary to appropriately manage a poisoned patient during transfer.

c. Drugs - At a minimum, tertiary facilities should have everything a secondary facility has plus BAL, EDTA, penicillamine, pralidoxime, antivenins (rattlesnake and black widow spider), and access to experimental antidotes such as cysteamine and thioctic acid.

d. Proficiency - In addition to laboratory services mentioned in the availability guidelines and capabilities listed under secondary facilities, tertiary facilities should be capable of providing cardiac pacing, esophogoscopy, hemodialysis, plasmapheresis, and charcoal hemoperfusion.

## 4.0 Description of the Present Situation

### 4.1 Inventory and Utilization Levels

Five Montana hospitals, Montana Deaconess Medical Center in Great Falls, St. Vincent's Hospital in Billings, St. Peter's Hospital in Helena, Deaconess Hospital in Bozeman, and Community Hospital in Missoula, have limited poison control information capabilities.

With the exception of St. Peter's Hospital, all of the above hospitals have a poison resource library located in their emergency rooms, with emergency room personnel giving out poison information to the public and professionals on a part-time basis. Poison information services at St. Peter's Hospital are located in the hospital pharmacy, with pharmacists dispensing information on a part-time basis. None of the hospitals have a poison control number separate from the hospital number and none have been performing follow-up, although Great Falls was to begin this service April 1, 1977. Great Falls had 325 calls in 1976; St. Vincent's Hospital in Billings had 33 calls between January 1 and April 12, 1977 (statistics were not maintained before that time); St. Peter's Hospital had approximately 500 calls a year; Missoula Community had approximately 100 calls a year and Bozeman did not keep statistics but received only a minimal number of calls.

In addition, the School of Pharmacy at the University of Montana in Missoula often receives drug and poison information calls, as do private physicians. It should be noted that the School of Pharmacy is planning to set up a statewide drug information system for health professionals. This system has the potential to be developed into a poison information resource as well.

Calls needing more extensive information than is available in Montana are referred out of state to regional poison control centers in Salt Lake City, Utah; Denver, Colorado; Spokane, Washington; and Seattle, Washington. In a survey of 10 major regional information centers, the Rocky Mountain Poison Control Center in Denver found that 10,000 to 12,000 calls a year per million population was the norm.[27] Both the Denver poison center and the Intermountain Poison Control Center in Salt Lake City have submitted proposals to the federal Emergency Medical Services Bureau to provide a regional/subregional poison network in the Mountain States region, which includes Montana.

An inventory of Montana's poison treatment capabilities is not available at this time. However, it is likely that Missoula, Great Falls, Billings and Helena have at least secondary capabilities.

4.2 Problems

5.0 Estimate of Service Requirements

One way to estimate Montana's poison control service requirements is to determine if the State can meet the minimum number of procedures or calls necessary to maintain proficiency. It is estimated that a regional poison information center needs 1,000 calls per month to maintain proficiency. Using the Rocky Mountain Poison Control Center's estimates that 10,000 to 12,000 poison calls can be expected each year for every million people served by the center, a poison information center in Montana could expect only 7,500 to 9,000 calls a year, or 625 to 750 calls a month. In time, if the incidence of poisoning calls remains constant or increases and if Montana's population increases, the state may be able to generate the necessary 1,000 poison calls per month.

Other factors which should be considered in estimating poison control service requirements include availability of personnel, availability of treatment and laboratory facilities, knowledge of the region's capabilities and geographic considerations.

Personnel needed for a regional poison information center and tertiary treatment facilities include a clinical toxicologist. Currently there are only 20 to 30 clinical toxicologists in the United States, and no medical schools

are training them, although a program in the specialty may be established soon. The requirements for becoming a clinical toxicologist include certification in internal medicine, pediatrics or some other specialty, plus five years of toxicology-related field work and a clinical toxicology examination. It is unlikely that Montana could attract a clinical toxicologist unless someone in the state decided to become certified as one.[28]

Currently, no single facility in Montana could be classified as a tertiary treatment facility, although Missoula, Great Falls, Billings and Helena could probably be classified as secondary treatment facilities.

All of the above information indicates that Montana could not support a regional poison information center or tertiary treatment facilities. However, another factor which should be considered in determining the need for poison information services is knowledge of the area served and the area's medical capabilities. Because Montana encompasses a large geographical area with a sparse population, an intermediary may be needed between out-of-state regional centers and in-state treatment facilities and poison information callers. A subregional center could meet this need.

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## BLOOD BANKING AND PROCESSING

## GOALS, OBJECTIVES AND RECOMMENDATIONS

1) No additional organizations offering blood banking services should be encouraged to service Montana. If they should attempt to do so, the current equilibrium being maintained would be upset resulting in higher costs through duplication of facilities.

2) Hospitals maintaining blood banks must have certified technologists trained in cross matching techniques.

3) Continued public education programs should be maintained by the two blood banking organizations in the state to assure that future supply will continue to meet the demand.

4) Quality control in processing is needed to guarantee the quality of the blood to a certain location in the state. A reciprocal agreement (formalized) between Red Cross and United Blood Services concerning the sharing of blood should be established.

5) Both Red Cross and United Blood Services should help hospitals establish a minimum and maximum amount of blood to be stored. Both agencies should establish a plan to prevent waste and better utilize their product.

# BLOOD BANKING AND PROCESSING

## 1.0 Service Description

### 1.1 Definition

Since 1937, when the first civilian bank in the United States was established, blood services have expanded significantly as blood has been collected and distributed on an increasing scale.[1]

One unit of human blood can provide: red blood cells, washed red blood cells, plasma, platelet concentrate, antihemophilic factors (A.H.F.), and other clotting factors. These are used in the following manners:

- Whole Blood and Red Blood Cells (for major surgery, hemorrhage and for replacement in other medical conditions).

- Frozen Thawed Red Blood Cells (for replacement of lost red blood cells, especially in patients who develop white blood cell antibodies, and patients who are undergoing renal dialysis who are candidates for transplantation).

- Serum Albumin and Plasma Fraction (shock, for replacement of proteins, and for patients with burns).

- Platelets (for patients who have a platelet deficiency such as patients who are undergoing chemotherapy for malignant conditions such as leukemia).

- Fresh Frozen Plasma, Antihemophilic Factor Concentrate and Cryoprecipitate (for hemophilic and other deficiency states, and bleeding disorders).

- Gamma Globulin (for patients with globulin deficiency and for patients with hepatitis, measles, etc., who need immune enhancement).

Blood should be used as soon as possible, for the longer it is stored, the fewer red cells remain and the oxygen releasing ability of these cells diminishes. Twenty one (21) days is the current maximum shelf life of a unit of fresh red blood cells. Fresh frozen plasma, if stored under proper conditions, and frozen red blood cells may be kept up to one year. Frozen red blood cells under experimental conditions have been stored and used for as long as five years. Unused outdated blood located in hospital blood banks are generally returned to the drawing center where the plasma is removed and outdated red cells disposed of. The pooled plasma is then sent to fractionating centers where it is converted into Serum Albumin and

other protein fractions such as Gamma Globulin, Antihemophilic Factor, and Plasma Protein Fraction. Each original distributor (drawing center) receives specified amounts of these manufactured products in exchange for the plasma. This allows for a total usage of blood and its components.

There are several thousand blood banks throughout the United States, all of which may be generally classified as one or more of the following types:[2]

- Hospital Blood Bank - operated by a hospital to meet its own needs and occasionally to supply the needs of other hospitals in the area.

- Community Blood Bank - non-profit facility at least partially locally organized and controlled to serve the needs of a majority or of all of the hospitals in a community.

- Regional Centers - of the American Red Cross.

- Other Blood Programs - privately owned blood banks operated as profit or non-profit making (not community) enterprises.

These blood banks and centers are responsible for the collection, processing, distribution and storage of most of the blood used by the health care system.

Blood is accepted from a selected population. The major requirements for blood donation in Montana are the American Association of Blood Banking requirements:

- Age 17 to 65.

- Minimum weight of 110 pounds.

- Interval of at least 8 weeks since last donation.

- Normal eating habits avoiding fatty foods and dairy products for four hours before donation.

For the protection of the donor and recipient, donors cannot be accepted under the following conditions:

- If they have had any form of cancer.

- If they have ever had viral hepatitis or jaundice.

- If they now have confulsions after infancy, are pregnant or six (6) weeks post partum, acute heart disease, tuberculosis, mumps, measles (rubella and rubeola), small pox, current infection, allergy-active, cold or asthma, or residing in a malaria area within the past three (3) years.

## 1.2 Geographic Boundaries

These guidelines are intended to address the blood banking systems in Montana and to provide guidance for future development. Parts of Northern Wyoming, and two counties in North Dakota are areas currently served by the regional blood collection, processing and distributing centers located in Montana.

## 2.0 Trends

Nationally, the major competitors in blood banking are the American National Red Cross and the American Association of Blood Banks (AABB). The major disagreement between these two agencies is over the "replacement fee", which is opposed by the Red Cross (as well as DHEW, the Council of Community Blood Centers and United Blood Services) and supported by AABB. It is thought that patients who need blood regardless of financial ability should receive blood. This fee is a penalty assessed against a person who uses but does not donate blood. The Blood Banks associated with the American Association of Blood Banks do not serve Montana. At the present time, no replacement fees or any sort are made in Montana.

## 3.0 Service Guidelines, Criteria and Standards

The Health Systems Agency has identified five areas of concern that must be addressed to maintain the blood service system: cost, availability (supply), accessibility, efficiency, and quality.

## 3.1 Cost

The cost of a unit of blood and/or its components, to each of the contracting participants with the Red Cross and Blood Services is determined in accordance with each phase of a blood program, namely: donor recruitment, blood collection, processing and other laboratory activities, blood distribution, and general expenses. There is no charge for the blood product per se.

## 3.2 Availability (Supply)

The supply of blood and blood products should be sufficient to meet all of the treatment and diagnostic needs of the people of Montana.

Each of the blood centers (Red Cross and United Blood Services) should assume responsibility for developing a program which meets the requirements of every health facility in its service area.

A simple rapid method to test donor blood available in smaller hospital labs for Australian B Antigen, etc. should be established because of the distance to the centers, as well as the increased costs and delay in getting blood from the centers.

A continuous program of public education and support should be maintained to produce an adequate supply of blood (blood donations).

### 3.3 Accessibility

The supply of blood is generally in balance with its demand (in addition, the reserves of this resource are enormous). The National Guard with year round helicopter service, the Air Force and the Highway Patrol should be utilized to provide greater accessibility.

### 3.4 Efficiency

There shall be efficient collections, processing, storage and distribution of blood and blood components. There should be a system of inventory control which would provide for constantly updated knowledge of the location and availability of all blood and blood products within each area.

### 3.5 Quality

There must be adequate quality control at all levels of processing and testing from donor to recipient.

Standards of the Federal Food and Drug Administration must be met by each center and hospital blood units. The centers and units affiliated with National Red Cross and United Blood Services must also meet the standards of their respective organizations.

## 4.0 Description of Present Situation in Montana

### 4.1 Inventory

On February 12, 1945, the twenty ninth legislative assembly authorized a state operated blood banking service to secure, process, store and distribute whole blood free of charge to the people of Montana. This state service was established on an emergency basis with $20,000 appropriated at the time. This appropriation was to be used for the purpose of purchasing equipment and paying expenses to carry out the purpose of the Act. State appropriations for blood banking were phased out over the ensuing six year period (final funds of $500.00 appropriated in 1949), and the Act was repealed in 1967.

Montana is serviced primarily by the American Red Cross (a regional center) based in Great Falls, and by United Blood Services (a cross between the community blood bank and the regional center, although its organization and control are not entirely at the local level), which is located in Billings.

Currently every hospital contracting with Red Cross or United Blood Services considers itself to be a Blood Bank. Typically, they have facilities for the storing and cross-matching, as well as provisions to accept blood under emergency situations.

Red Cross services forty eight (48) of Montana's fifty six (56) counties, and two (2) counties in North Dakota (McKenzie and Williams). Fifty seven (57) hospitals in this total area have contracted with Red Cross. United Blood Services contracts with twenty five (25) hospitals in Montana and in Wyoming. The Montana counties serviced by United Blood Services are: Big Horn, Carbon, Deer Lodge, Granite, Musselshell, Sweet Grass, Rosebud, Silver Bow, Treasure and Yellowstone. However, the two agencies do not solicit business in any areas other than their own.

Red Cross began service in Montana in the late 1940's. Currently, the Blood Center in Great Falls, using the center as well as mobile units, collects approximately 400-450 units of blood per week and 20,000 units annually.

Red Cross, for the last five years, has remained consistent in its services, in that the number of blood units collected (1 blood unit = 1 pint) has been meeting unit demand. Fiscal year 1975 is indicative of past as well as present collection, production, preparation, and distribution. Table 1 is a breakdown of blood components collected and produced in that year. It shows that about 65 percent of the blood processed by Red Cross in Montana is prepared as whole blood. Montana statistics and trends for blood components are consistent with the national trends.

In its preparation and distribution of blood, the Great Falls Center has incurred minimal loss or waste. During Fiscal Year 1975 this amounted to 1.6 percent, however, expirations are not included in this 1.6 percent.

In 1965, United Blood Services, a non-profit, medically sponsored operation headquartered in Scottsdale, Arizona, began operating in Montana at the invitation of the Yellowstone Valley Medical Society. Through its office and laboratory in Billings, this agency collects on the average of 900 units of blood per month and 10,800 units annually.

TABLE 1

BLOOD COLLECTED IN MONTANA AND IN THE NATION BY
RED CROSS AND UNITED BLOOD SERVICES DURING FISCAL YEAR
July 1, 1974 through June 30, 1975 (2)

| RED CROSS | MONTANA | U.S.A. |
|---|---|---|
| Units Whole Blood Collected | 19,770 | 4,291,519 |
| % Increase Over the Prior Year | +6.0 | +12.1 |
| Number of Units Used as Whole Blood | 13,069 | 2,687,036 |
| % Used as Whole Blood | 66.1% | 62.6% |

| UNITED BLOOD SERVICES | MONTANA | U.S.A. |
|---|---|---|
| Units Whole Blood Collected | 9,419 | 316,631 |
| % Increase Over the Prior Year | 9.3% | 8.6% |
| Number of Units Used as Whole Blood | 3,872 | 110,821 |
| % Used as Whole Blood | 46.9% | 35% |

Both Red Cross and United Blood Services recover costs largely by billing hospitals for blood components requested (the processing fee). Table 2 shows items available through each agency and the fee assessed each blood item.

## 4.2 Problems

Red Cross and Blood Services are both moving into new facilities in 1977. The capacity of the existing facilities has been reached. New technology and medical advances necessitate the moves. The need for more storage and work space is evident in both cases. In addition, with the new space, the Red Cross will be able to provide fresh frozen blood cells.

The new Red Cross Center will be built under a condominium arrangement with the Montana Deaconess Hospital. Title to the floor occupied will rest with Red Cross. Space for further construction will be available at the new site. The need for freezer units and deglycerolyzing equipment as well as provision of fresh frozen red cells will be met with the move to the new facility. There is a need for more fractionation of blood. Physicians should be encouraged to use the washed red cells where possible when the only problem is an anemia.

At present, there is a need for satellite blood distribution centers throughout the state. Butte functions as a satellite area for Blood Services (a satellite center stores blood and blood products to quickly service hospitals in the immediate vicinity). Red Cross presently has no satellite facilities, however, with the new Center, frozen red cells will be made available and the need for satellites intensified. Approximately $60,000 will be required to equip the satellite centers Red Cross intends to use. After the new Great Falls Center is functioning, operational equipment will be installed in Kalispell, Missoula (a subcenter to draw, process and distribute), Miles City, Glasgow, Bozeman, and Williston, North Dakota.

There appears that there will be no increase in either the Red Cross or United Blood Services budgets, due to the expansion plans, so that the new Centers will not cause increased operating costs.

## 5.0 Calculation of Need

In terms of the population served and the amount of blood currently demanded, there appears to be no numerical relation between them. The current collection of approximately 600 blood units per week and 29,189 units annually for the 1976 estimated population of 700,000 appears to be adequate.

TABLE 2

Red Cross Fee (Effective July 1, 1976):

| | | |
|---|---|---|
| Whole Blood | (21 day dating) | $35.00 |
| Red Cells | (21 day dating) | 35.00 |
| Fresh Frozen Plasma | (one year) | 20.00 |
| Cryoprecipitate | (one year) | 8.00 |
| Platelet Concentrates (regularly stocked) | (72 hour expiration) | 20.00 |
| Red Cells Leukocyte Poor | (Special request - 12 day dating) | 40.00 |
| Normal Serum Albumin (Human) Concentrated, Salt Poor | | 30.00 |
| Plasma Protein Fraction, 5% 250 ml. per unit 12.5 grams in 50 ml. solution (25%) per unit | | 30.00 |

Gamma Globulin (Available on request no cretina required)

| | |
|---|---|
| 2 ml. vial | 1.20 |
| 10 ml. vial | 5.50 |

Credit for return of Whole Blood and Red Cells (on papers returned promptly to the Center when cells are destroyed) 30.00

Blood Services Service Fee (as of November 1, 1976):

A. Standard - Returnable

| | |
|---|---|
| Red Blood Cells (Human) Prepared by Blood Services | $33.00 |
| Platelet Concentrate (Human) (36-48 hours dating remains) | 14.00 |
| Whole Blood - Multiple Plastic Bags Requested | |
| One Satellite Plastic Bag | 37.00 |
| Two Satellite Plastic Bags | 41.00 |
| Three Satellite Plastic Bags | 45.00 |
| Whole Blood (Human) - CPD | 33.00 |

B. Special - Not returnable

| | |
|---|---|
| Washed Red Blood Cells (Human) | $40.00 |
| Reconstituted Red Blood Cells (Human) | 33.00 |
| Whole Blood (Human) - Heparingized | 33.00 |
| Single Donor Plasma Fresh Frozen, 225 ml. + 25 | 12.00 |
| Cryoprecipitated Antihemophilic Factor | 7.00 |

No fee is charged for blood not transfused in United Blood Services hospitals. The fee is charged only for blood transfused ($33.00).

The new facilities, both of which are under construction, will aid in the collection, processing and distribution of the current amount, but will not substantially increase or decrease blood collection quantities. The quality of service will be enhanced, for working and storage space will be increased (Red Cross will triple its current working space). The facilities being developed by the Red Cross will hopefully include computerization and automation.

At present and for the next five years, a weekly supply of 400-450 units for Red Cross and 225 units for United Blood Services appears to be an adequate amount to service Montana.

In summary, it appears that no major changes are needed in the blood banking systems currently servicing Montana.

## REFERENCES


1. Diamond, L.K., 1965, History of Blood Banking in the United States, Journal of the American Medical Association 193: 128-32.

2. Blood Program Operations Report, the American National Red Cross, for fiscal year July 1, 1974 through June 30, 1975.

## COMPUTERIZED TOMOGRAPHY (CT) SCANNERS

## GOALS, OBJECTIVES AND RECOMMENDATIONS

1) No more than three CT scanners should be located in Montana until those three scanners reach utilization levels which indicate a need for further machines; however, it is expected that those three facilities will deliver a quality and cooperative service to all patients and referring physicians in the area serviced.

2) Placement of CT scanners should be based on the following criteria: cost effectiveness, scope and volume of services, accessibility, and availability of qualified personnel.

3) Applications for replacement of CT scanning equipment should not necessarily receive precedence over new applications.

4) This CT plan should be updated annually by the HSA/SHPDA to reflect changes in Montana's population and health care patterns and changes in CT utilization and technology.

# COMPUTERIZED TOMOGRAPHY (CT) SCANNERS

## 1.0 Service Description

### 1.1 Definition

A Computerized Tomography (CT) Scanner is a computerized X-ray system which, through its ability to detect extremely small differences in tissue density, can produce cross-sectional pictures of the head or body, including pictures of organs obscurred in conventional X-ray photographs.

Developed within the past decade, the CT scanner has been called (by the American College of Radiology), "the most wondrous gadget since the X-ray."[1] It seems to have many potential uses, but the word potential should be stressed because CT is a relatively recent and rapidly changing technology with many unknown factors surrounding its uses. There are primarily two kinds of CT scanners: head scanners, designed to diagnose abnormalities within the skull, and whole or full body scanners. A scanner exclusively for breast scanning also is available and other organ-specific or area-specific scanners may be developed in the future.[2] These guidelines will address head and body scanners.

#### Head Scanners

Most of the scanners now being used are head scanners and, so far, CT scanning has had its greatest impact in evaluating neurological conditions.[3] Table 1 lists some of the diseases a head scanner can detect. In practice, CT head scanning is used most often for the diagnosis of mass lesions, cerebrovascular disease and diseases that result in enlargements of the ventricular space of the brain.[4]

Before the introduction of CT scanners, diagnostic information about brain disorders was obtained by conventional skull X-rays and special techniques such as nuclear or radioisotope brain scanning, electroencephalography, echoencephalography, cerebral angiography and pneumoencephalography.[5]

CT scanning generally provides more accurate diagnostic information than does conventional skull X-rays, but X-rays are often used to detect abnormalities of the bone, such as fractures, which are difficult to see on CT scans. Also, skull X-rays are considered a standard screening procedure for patients with neurological symptoms. For these reasons, CT has had, and some radiologists predict, will have, little impact on skull X-ray utilization.[6]

Radionuclide brain scanning involves the injection of radioisotopic material into the blood stream and the scanning of the head by a camera which can detect and record the

radioactivity. Areas with abnormal concentrations of radioactivity are presumed to be damaged. This procedure can be done on outpatients, and is somewhat less expensive than CT scanning. However, CT has proven superior to radionuclide brain scanning in many diagnostic accuracy studies. The impact of CT on radionuclide brain scanning, while varying from one institution to another, has generally resulted in a 30 to 40 percent reduction in radionuclide scans.[7]

Electroencephalography is the recording of the electric currents developed in the brain, by means of electrodes applied to the scalp or the surface of the brain, or placed within the substance of the brain. It provides a unique set of data which cannot be obtained with CT, and therefore, CT should have little effect on it.[8]

In echoencephalography, ultrasonic waves are directed at the head, and their reflections are detected and analyzed to acquire information about distortions in the shape of the brain. This is a noninvasive and safe procedure and can be done on an outpatient basis at somewhat lower cost than CT. However, the accuracy of echoencephalography and CT have not been systematically compared. The Mayo Clinic, the only institution to study the impact of CT on echoencephalography, reports that its use of echoencephalography has declined about 50 percent since CT was introduced.[9]

Cerebral angiography and pneumoencephalography, unlike the other procedures, involve some risk to the patient and require hospitalization. In cerebral angiography, contrast material is injected in the bloodstream, and during the infusion, the blood vessels in the skull can be imaged by conventional X-ray techniques. CT has been found to be as accurate as cerebral angiograms in revealing and localizing neurological lesions. However, cerebral angiograms have been decreased only 20 to 30 percent since CT was introduced.[10]

Pneumoencephalography involves the injection of air into the spinal canal. This air then moves up into the ventricles of the brain where it can be seen on conventional X-rays. Distortions in the ventricular space indicate space-filling lesions in the brain. CT scanning, which is about as accurate as pneumoencephalography, has reduced the number of pneumoencephalograms by about 60 percent.[11]

In many cases, CT scans are used in addition to the above diagnostic methods. This tendency may decrease, however, as doctors become more familiar with and confident in CT.[12]

According to a study done for CT marketers by the consulting firm of J. Lloyd Johnson Associates, overall average accuracy varies from one diagnosis to another. For example, in cases of intracerebral or epidural hematoma, it is 100 percent accurate, but for cases of infarction it is only 52 to 75 percent accurate.[13]

TABLE 1

SOME DISEASES THAT CAN BE DIAGNOSED BY CT SCANNING*

| Head Scanning | Body Scanning |
|---|---|
| Mass lesions | Tumors or cysts in: |
| astrocytoma | adrenal |
| glioblastoma | kidney |
| meningioma | larynx |
| metastatic neoplasms | liver |
| oligodendroglioma | lung |
| optic nerve tumors | Mediastinum |
| orbital tumors | pancreas |
| cysts | parathyroid |
| | Pelvis |
| Atrophy | pelvis, pharynx |
| Cerebral abscess | retroperitoneum |
| Hydrocephalus | thyroid |
| Porencephaly | |
| Trauma | Aortic aneurysm |
| Tuberous sclerosis | Obstructive jaundice |
| | Syringomyelia |
| Cerebrovascular disease | |
| aneurysm | |
| arteriovenous malformation | |
| infarction (stroke) | |
| intracerebral hemorrhage | |
| subarachnoid hemorrhage | |

*This Table lists only some of the diseases for which CT scanning has been applied; it is not comprehensive.

**This Table was taken from, The Computed Tomography (CT or CAT) Scanner and Its Implications for Health Policy, United States Congress, Office of Technology Assessment, Health Assessment Program, September, 1976, Draft., p. 22

Body Scanners

Currently, most of the new scanners being installed are full body scanners, even though in practice body scanners are often used primarily for head scanning. Experience with the body scanner is limited, but it has been applied to organs of the abdomen, thorax and neck, and to the extremities (Table 1). Some evidence suggests that the scanner can reveal tumors in the liver, pancreas, kidney, and retroperitoneal space as well as aortic aneurysms. It also can differentiate obstructive from non-obstructive jaundice, a distinction that is important for therapy planning.[14]

Research at the Mayo Clinic[15] has shown that the most obvious value of the CT body scanner is in the diagnosis and study of mass lesions, both benign and malignant. This has been most proven in the abdominal masses, though evaluation has also begun in the chest area. The body scanner has proven valuable for:

- Early detection of disease.

- Evaluation of disease whose presence is already detected.

- Determination of whether disease is benign or malignant.

This applies potentially to any organ or pathological process. Results so far have shown that the body scanner is better at initial detection of disease in some organs, while in other organs the scanner is more successful in evaluating already detected diseases. For example, at the Mayo Clinic, tests indicate the body scanner is quite accurate in initial detection of lesions of the pancreas, but is not as accurate in telling whether they are benign or malignant. On the other hand, it is difficult to detect lesions of the kidney, but once they are found, the scanner can show if they are benign or malignant. Some radiologists feel that body scanning will have less impact on diagnostic practices than head scanning because many techniques of high accuracy are already available for diagnosing lesions in the thorax and abdomen.[16]

In the future, the body scanner may be used in connection with various therapies, such as positioning of biopsy needles and monitoring the response of tumors to chemotherapy or radiation therapy. It also may be used for biomedical research.[17]

Documentation of body scanner potential and body scanner impact on the type and number of other diagnostic tests will probably take much longer than documentation for head scanners. One reason for this is that while head scans are directed at a confined space with very specific symptom complexes, body scans must cover a large space with diverse symptom complexes.

Also, the brain's two halves have a high degree of symmetry making clinically significant aberrations easier to recognize in the head than in the body.

Both the head and body scanner work by rotating around the area to be scanned, sending out X-ray beams. As these beams pass through the scanned area, they are detected by a device on the other side. The detector device registers the amount of radiation received and this information is fed into a computer, which in turn, through a process of simultaneous equation solving, arrives at a coefficient of X-ray absorption for each portion of the scan. It then gives a digital readout of the different densities of the area scanned. Each density value is precoded to show a different shade of gray (or color on color pictures) and the computer finally arrives at a three-dimensional picture of the area scanned.

Scanning time varies according to the type and newness of the machine. Older machines take from 4½ to 5½ minutes to complete a 180 degree scan while newer machines can complete a scan in as little as five seconds. Usually from six to eight scans are made to complete a diagnosis, meaning a half hour to an hour must be scheduled for each patient.[18]

In about 60 percent of CT cases, after a scan is completed, contrast material is injected into the patient. This contrast medium remains in the blood stream and increases the X-ray density of the blood; the scanning procedure is then repeated to obtain additional information. This injection involves additional time and some risk to the patient.[19] When a contrast medium is not used, CT can be considered a non-invasive technique.

Scanning can be done on an outpatient or inpatient basis, and it is done on all segments of the population. However, more scans are done on an inpatient basis and the older population generally has the most need for CT.[20]

## 2.0 Background Trends

### 2.1 Incidence, Prevalence and Mortality

### 2.2 Service Trends

The first CT unit was introduced in England in 1972; the first in the United States was installed at the Mayo Clinic in June, 1973. By August, 1976, more than 320 scanners had been installed in the U.S., while another 550 units had been approved by health planning agencies. Reviews were pending on another 200 units.[21] In addition, 15 companies world-wide had developed 25 different CT models.[22] All of this indicates a trend toward acceptance of CT as a diagnostic tool for general use.

Another trend has been rapid improvements in CT technology. Besides the extension of CT capability from the head to the entire body, a major advance has been shorter scanning times. Smaller improvements include clearer pictures and better storage systems. Because the technology is changing so rapidly, new machines being developed will probably make current machines obsolete within a short period of time.

Still a third trend is that CT scanner costs have not increased in proportion to the improved technology. Just as is the case with other fields depending on electronic devices, it may be expected that the trend will continue.[23]

The last two trends indicate that caution should be exercised in acquiring scanners.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Estimates of annual operating costs for one scanner are shown in Table 2. Costs are figured on the basis of 1,000, 2,000 and 3,000 procedures per year (equivalent to 4, 8 and 12 procedures per day). Assumptions used in making these estimates are noted. Because of the relatively high purchase price and rapidly changing CT technology (which may make current machines obsolete within a couple of years) depreciation costs are notably high. Given the assumptions in the table, annual operating costs will average about $250,000. Cost estimates from other CT facilities and planners range from $150,000[24] to $491,000.[25]

Because costs do not increase in proportion to the number of procedures performed, higher utilization should result in lower costs to the patient.[26] Based on operating costs of $250,000 a year per scanner, approximately 2,000 scans a year are necessary to assure that patient charges are kept at a reasonable level.

In order to keep costs down, CT installations should meet, and not exceed, a community or area need. Health facilities should cooperate in planning the placement of CTs where they will best meet that need.

### 3.2 Availability

A CT scanner should be available for use at least 40 hours a week and more where demand or emergency situations dictate.

### 3.3 Accessibility

CT scanners should be located in a hospital setting, not only to insure the availability of support services, but also because they are community resources and the community should have easy access to them.

TABLE 2

ESTIMATE OF CT SCANNER ANNUAL OPERATING COSTS*

| | 1,000 Scans | 2,000 Scans | 3,000 Scans |
|---|---|---|---|
| Technical Staff[a] | $ 36,000 | $ 36,000 | $ 36,000 |
| Professional Component[b] | 72,000 | 72,000 | 72,000 |
| Supplies[c] | 5,000 | 10,000 | 15,000 |
| Maintenance | 17,000 | 17,000 | 17,000 |
| Indirect Costs[e] | 32,250 | 33,000 | 33,750 |
| Depreciation[f] | 84,000 | 84,000 | 84,000 |
| Insurance[c] | 1,000 | 1,000 | 1,000 |
| Total Operating Cost | $247,250 | $253,000 | $258,750 |
| Operating Cost Per Procedure | $247 | $126 | $86 |

a. Two technicians and one secretary receptionist: salary and fringe benefits.

b. One neuroradiologist.

c. Manufacturer's estimates.

d. Maintenance contract: $85,000 for five years.

e. Estimated at 15 percent of direct costs.

f. Straight-line depreciation of $420,000 capital cost over five years.

* Taken from "Report Concerning the Acquisition and Use of Computer-Assisted Tomography in Connecticut," State of Connecticut Commission on Hospitals and Health Care, April 23, 1976.

Scanning should be available as close as is economically feasible to a patient's home and should be available to the patient regardless of his or her ability to pay.

Because of the expensive nature of CT scanners, it is impractical to have one in every hospital. Therefore, they should be geographically distributed to assure accessibility, high utilization and reasonable patient charges.

### 3.4 Continuity

In order to assure continuity of care, CT facilities should have written agreements with providers outside the facility assuring that those providers have:

- equal access to the scanner, for either inpatients or outpatients;
- cooperative use of the scanner; and
- prompt reporting of CT results to referring physicians.

### 3.5 Quality

Because the full range of CT's uses is unknown and because charges have been made that there is a tendency to keep CT's in use once they are installed (whether or not there is an actual need for CT),[27] utilization and quality review groups should be established. Preferably, the Professional Standards Review Organization, a legally-mandated peer review group, should perform this function.

Hospitals installing CT scanners should have the following service capabilities: a diagnostic radiologist with special interest and competency in CT; a neurologist or neurosurgeon; a radiation therapist; a thoracic and/or cardiovascular surgeon; a urologist; adequate support staff.[28]

Volume in the above named specialties should be adequate to maintain a high level of competency.

## 4.0 Description of Present Situation

### 4.1 Inventory and Utilization Levels

Currently, one CT scanner is in operation in Montana and one is on order. The unit in operation is being leased by Eastern Radiological Associates of Billings and was located in that group's offices in September, 1976. The scanner is in operation approximately 40 hours per week, with approximately 70 scans being performed per month.

Columbus Hospital in Great Falls has obtained state approval to purchase a scanner. It is scheduled for installation later this year.

In addition, a number of Montana patients are referred out-of-state for scans.

## 4.2 Problems

The main problems associated with CT scanners are based on two facts: CT is a new technology and it is expensive.

Because of CT's newness, we have little knowledge of its use patterns and its impact on other procedures. It also is difficult to predict future CT trends and to arrive at guidelines for its use.

CT's high costs create other problems: how do we make the service available to patients at a reasonable distance from their homes and at a reasonable cost? Who determines where CT's will be located? Who determines what is reasonable cost? Who pays those costs? Nationally, the annual operating cost for CT scanners has already risen above $200 million. This bill is being paid, in part, by individual patients, and, in part, by third party payers. Patient fees range from $150 to more than $400. Not all third party payers reimburse for scanning. Medicare reimburses only for head scans done by either head or full body scanners approved for commercial use by the Food and Drug Administration. And while X-ray services are mandated under the Medicaid program, each state determines whether to include CT scanning. Montana does pay for scanning under Medicaid. Each of the Blue Cross Association member plans sets its own policies; several of the plans have limited reimbursement to scans performed on the head until further information is known on the effectiveness of body scans. The Blue Cross Association also has suggested to its member plans that wherever possible payments for CT scanning should be linked to health planning programs.[29] In Montana, Blue Cross has not yet determined a policy for reimbursement on CT scans. Blue Shield in Montana reviews each case before deciding whether to reimburse. Other private insurance groups vary in their coverage of CT scanning.

Under Section 1122 of the Social Security Act and certain state Certificate of Need laws, health planning agencies must review purchases of CT scanners to determine if a need exists for a CT scanner in a particular community or area. However, health planning agencies are having difficulties reviewing applications for CT scanners because guidelines and criteria are lacking due to CT's newness. Also, the planning process may be circumvented in some states, including Montana, by physicians who install scanners in their offices; physicians offices are not under the jurisdiction of Section 1122 or most Certificate of Need laws.

## 5.0 Estimate of Service Requirements

Three methods for determining the need for CT scanners have been used by other health planners and health providers.

Those methods are:

- Minimum population needed to support a scanner.

- Number of other diagnostic procedures currently being performed.

- Geography.

To be statistically accurate, a projection of the minimum population needed to support a scanner should be based on either past utilization trends or on incidence of disease among the population. Because CT is a new technology, past utilization trends are not available. Incidence of disease also is difficult to determine because the full range of diseases detected by CT is unknown. And in Montana, incidence data is not maintained on even those diseases, such as neurological disorders, which CT has proven useful in diagnosing.

Other states have used figures ranging from one scanner per 100,000 population to one scanner per HSA area, which in Montana, is the entire state. Montana's neighboring state, Idaho, has used a population figure of 250,000.[30]

A second method for estimating the number of scanners required in Montana is the number of other diagnostic methods currently being performed. Where CT has been installed, it has at least partially replaced some neurological procedures and is being used in addition to others. Table 3 shows the number of cerebral aniograms, pneumoencephalograms and brain scans done in 1975 and 1976 in Montana cities.

The Comprehensive Health Planning Council of Northern Virginia[31] estimates that 20 percent of cerebral angiograms, 75 percent of pneumoencephalograms and 90 percent of nuclear brain scans will be subjected to CT scans. Using this formula, one can arrive at the total number of head scans that can be expected in an area.

Head Scans = .2C + .75P + .9B

where C = cerebral aniograms
P = pneumoencephalograms
B = nuclear brain scans

Data on the number of expected body scans is more difficult to obtain because, again, the full scope of body scanning's uses is unknown. Those institutions which have CT body scanners have been using their machines primarily for head scanning. The ratio of head scans to body scans also varies from one institution to another, but generally from 75 to 90 percent of scans done are head scans.[32]

TABLE 3

NUMBER OF DIAGNOSTIC PROCEDURES PERFORMED AT

MONTANA CITIES, 1975, 1976

| CITY | CEREBRAL ANGIOGRAMS | | PNEUMOEN-CEPHALOGRAMS | | BRAIN SCANS | |
|---|---|---|---|---|---|---|
| | 75 | 76 | 75 | 76 | 75 | 76 |
| Missoula | 279 | 416 | 123 | 111 | 747 | 925 |
| Kalispell | 38 | 45 | 2 | 4 | 140 | 237 |
| Butte | 4 | 0 | 0 | 0 | 304 | 102 |
| Western Region | 321 | 461 | 125 | 115 | 1191 | 1264 |
| Great Falls | 405 | 397 | 111 | 64 | 1344 | 1365 |
| Conrad | 0 | 0 | 0 | 0 | 55 | 42 |
| Helena | 2 | 0 | 0 | 0 | 612 | 450 |
| Havre | 0 | 0 | 0 | 0 | 155 | 219 |
| Lewistown* | 0 | 0 | 0 | 0 | 20 | 34 |
| Northern Region | 407 | 397 | 111 | 64 | 2186 | 2110 |
| Billings | 172 | 205 | 43 | 32 | 1042 | 882 |
| Miles City | 6 | 0 | 0 | 0 | 0 | 70 |
| Bozeman | 0 | 0 | 0 | 0 | 121 | 158 |
| Southern Region | 178 | 205 | 43 | 32 | 1163 | 1110 |
| MONTANA | 906 | 1063 | 279 | 211 | 4540 | 4484 |

*Lewistown is 105 miles from Great Falls and 128 miles from Billings, making it an area where regions will overlap.

Figuring that 25 percent of the total scans would be body scans, one can add this to the previous formula to arrive at a total number of scans to be expected on a body scanner:

Total Scans = 4/3 Head Scans = 1.33 Head Scans

Using this formula, Montana as a whole could support three scanners, but no individual hospital could support a scanner without referrals from other hospitals. This means that Montana hospitals must share CT services.

This brings one to the third method for determining need for a CT scanner - geography. In Montana, there are three main medical service areas for specialized care: Missoula, Great Falls and Billings. Butte, Helena, Kalispell, Havre and Miles City are secondary service areas for specialized care. The Missoula area includes all of the area in Montana west of the Continental Divide; the Great Falls area includes the northern half of the state east of the Divide and the Billings area includes the southern half of the state east of the Divide. Some overlap exists in all three areas. Using the formula above, only the Great Falls area has more than 2,000 projected scans. But, because Montana encompasses a large geographic area, a CT scanner in each of these areas seems appropriate to assure accessibility.

All three of the above methods for determining need for CT scanners contain flaws, largely because need projections are limited by CT's newness and the many unknown factors surrounding its uses. However, all, at least the latter two methods, tend to point toward a need for three CT scanners in Montana. More than three CT scanners in the state, at this time, appears to be premature because of the relatively sparse population in the state, the relatively high cost involved in providing CT and the possibility that current machines may become obsolete within a short period of time.

Table 4 summarizes the number of scanners required in Montana and each of the three main medical service areas, according to the methods used above for estimating service needs.

TABLE 4

SUMMARY OF SERVICE ESTIMATES

CT'S REQUIRED ACCORDING TO METHOD USED

| AREA | NUMBER OF OTHER PROCEDURES | GEOGRAPHY |
|---|---|---|
| Montana | 3 | 3 |
| Western Montana (Missoula) | 0 | 1 |
| Northern Montana (Great Falls) | 1 | 1 |
| Southern Montana (Billings) | 0 | 1 |

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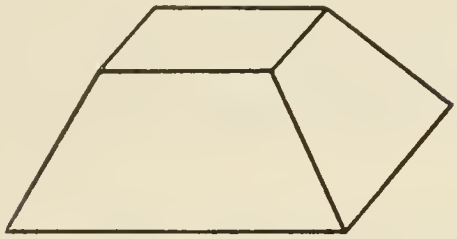
# CHAPTER 4

## SECONDARY HEALTH SERVICES



Secondary care can be viewed as the middle ground both in terms of medical treatment and in frequency of patient utilization. Secondary care services require a greater population than primary care services to justify their development since they are utilized less frequently by the general population and usually require substantial capital investment. Even though the services are fewer in number, they will always be found within the health service area.

Individuals requiring this level of care generally have health problems serious or complex enough to require a visit to a specialist and/or a health facility, (i.e., a general hospital or nursing home).

The community hospital serves as one of the major facilities for secondary care. The community hospital provides trained personnel, special diagnostic equipment, and inpatient services. Hospital services typically provided at the secondary care level include inpatient services for general surgery, medical treatment and psychiatric diagnosis and treatment. Secondary care also includes diagnostic procedures, therapeutic services and rehabilitative therapies. Skilled nursing and intermediate care are long term secondary care services.

In this chapter, the following secondary health services are addressed:

- General Hospital Acute Inpatient Service,
- Critical Care (ICU/CCU) Beds,
- General Hospital Psychiatric Beds,
- Clinical Laboratory Services,
- Diagnostic Imaging,
- Long Term Care Facilities,
- Home Health Care.

## GENERAL HOSPITAL ACUTE INPATIENT SERVICES

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The goal of these guidelines is to insure an adequate number of acute care hospital beds in Montana in the future without excessive duplication. Where possible, hospitals should strive to contain costs without sacrificing the quality of the services rendered.

In concert with these goals, the following recommendations are suggested:

1) The national goal of 4.0 beds per 1,000 population is not appropriate at the local level. It may have some application for planning acute care beds at the regional and state levels. The allocation of hospital beds should be based upon utilization experience. In addition, geographical and distance factors should be heavily considered.

2) The primary method of reducing excess hospital beds in Montana should continue to be through the review process with emphasis on the voluntary reduction of excess hospital beds. The construction or modernization of unnecessary hospital beds should be disapproved. Hospitals having excessive beds (beyond the number needed in reserve) and wishing to remodel or renovate their facilities should reduce the number of beds being maintained.

3) Rural hospitals should be encouraged to develop combination hospital/long-term care facilities/community health centers. The possibility of using long-term beds should be investigated with congressional leaders, the state legislators, regulatory and licensing agencies, and third party reimbursement organizations. This effort should receive high priority by the agency during the upcoming year.

4) Future versions of this plan should address ways in which excess hospital beds in multi-hospital communities can be gradually taken out of service.

5) Future versions of this plan should also address the problem of rural hospitals in more depth.

6) Within the next year, a detailed patient origin study should be conducted to better specify the catchment areas of each hospital. Results of this study should be published within six months after its completion. In the future, all hospitals will be expected to keep detailed patient origin information, by service. This information will be expected in any application undergoing review under Certificate of Need on Section 1122 of the Social Security Act.

7) Hospitals throughout Montana should be encouraged to develop and implement methods of sharing services and forming satellite systems wherever economically effective.

8) The effectiveness of the various cost containment experiments currently being tried in Montana should be studied and evaluated. These include the Montana Hospital Rate Review System, the Montana Hospital Association's Group Purchasing Service, and the 1122 and Certificate of Need Review process. In addition, the impact of PSRO on costs should be investigated.

# GENERAL HOSPITAL ACUTE INPATIENT SERVICES

## 1.0 Service Description

### 1.1 Definitions

As one of their major functions, general hospitals provide 24-hour inpatient services for the diagnosis, short-term care, and treatment of patients. Inpatient services range from very generalized medical-surgical procedures to highly specialized and sophisticated services in specially designed units. The range of services delivered by any one hospital depends on the population and the geographic area being served as well as such factors as transportation access, physician accessibility and specialization, availability of required personnel, utilization of service, and economic feasibility.

The intent of these guidelines is to establish goals and objectives for the future development of inpatient services in Montana. As part of this activity, the local need for short-term (patient stays of generally less than 30 days) hospital beds are estimated. These include medical/surgical, obstetrical (maternity), and pediatric beds. Critical (intensive or coronary) care and acute psychiatric beds will be addressed in separate sections of the plan. Hospital outpatient services will also be addressed separately at some future time.

In the past, the need for these beds has been addressed in the Montana State Plan for Hospital and Medical Facilities Construction (Hill-Burton Plan.)[1] In the future, this function will be performed by the State Medical Facilities Plan. When adopted, the State Medical Facilities Plan will be used to carry out the administrative functions relating to financially assisted facilities under Titles VI and XVI.

Proposed national guidelines for health planning and for State Medical Facilities Plans are currently being circulated for comment. The national guidelines indicate that DHEW has established two goals for planning acute care inpatient medical facilities. They are:

1) an average bed per population ratio of less than 4.0/1,000 and
2) an average minimum occupancy rate of 80 percent.

The proposed guidelines acknowledge the special problems confronted by small rural hospitals. Exceptions from the above goals can be awarded for hospitals in isolated areas (more than 45 minutes from another facility) and having low admission rates (less than 4,000 admissions/year).

The draft guidelines for State Medical Facilities Plans contain the above two goals as well as indicate that an overall use rate of ',000 patient days per 1,000 population is also desirable.

Obstetrical and pediatric services are singled out in the national guidelines as areas of potential consolidation and regionalization. The proposed guidelines call for:

- Each obstetrical unit having at least 500 deliveries per year. Units in communities of 100,000 or more should annually have at least 2,000 births. Both should maintain an annual average occupancy rate of 75%.
- Each pediatric unit having a minimum of 20 beds.

In both cases, exceptions are allowed for remote areas. (45 minutes driving time for OB units and 30 minutes for pediatric units).

## 1.2 Geographic Boundaries

It is emphasized that because no recent and complete patient origin data exists for Montana hospitals, the analysis of bed need and conclusions based upon it are extremely tenuous. Before any deliberate attempt to reduce excess hospital capacity can be undertaken, population based data defining each hospital catchment area must be available.

Until this patient origin data becomes available, it is assumed that the primary catchment area for each hospital is the county in which it is located. As is shown in Table 1, approximately 75 percent of all admissions in 1976 came, or originated, from the county in which the facility was located. The problem is that many larger hospitals (those with 50 or more beds) serve as referral centers for their regions. Approximately 27 percent of the persons admitted to these hospitals come from outside their immediate county. This is about 12 percent more out of county patients than were admitted to hospitals with less than 50 beds. In terms of absolute numbers, some of the larger hospitals serve more out of county patients than some small hospital's total admissions. The number of in-county and total admissions for each hospital in 1975 and 1976 is presented in Appendix A.

## 2.0 Background Trends

The present health care delivery system focuses on the treatment of an illness or disability after it has occurred. Although future emphasis may be placed on preventive programs, there will always be a need for diagnostic and treatment facilities and for hospital beds.

The most visible trend within the health care industry today is that costs are increasing at a greater pace than in the rest of the economy. Figure 1 compares the increase in medical care prices with the consumer price index (CPI). In the last eight months of 1974, medical prices increased 14.1 percent where the CPI increased 12.2 percent.[5] A major contributor to this increase has been the cost of hospital care. In fiscal year 1975, it made up 34 percent of the private and 63 percent of the public expenditures of the total health care dollar.[3]

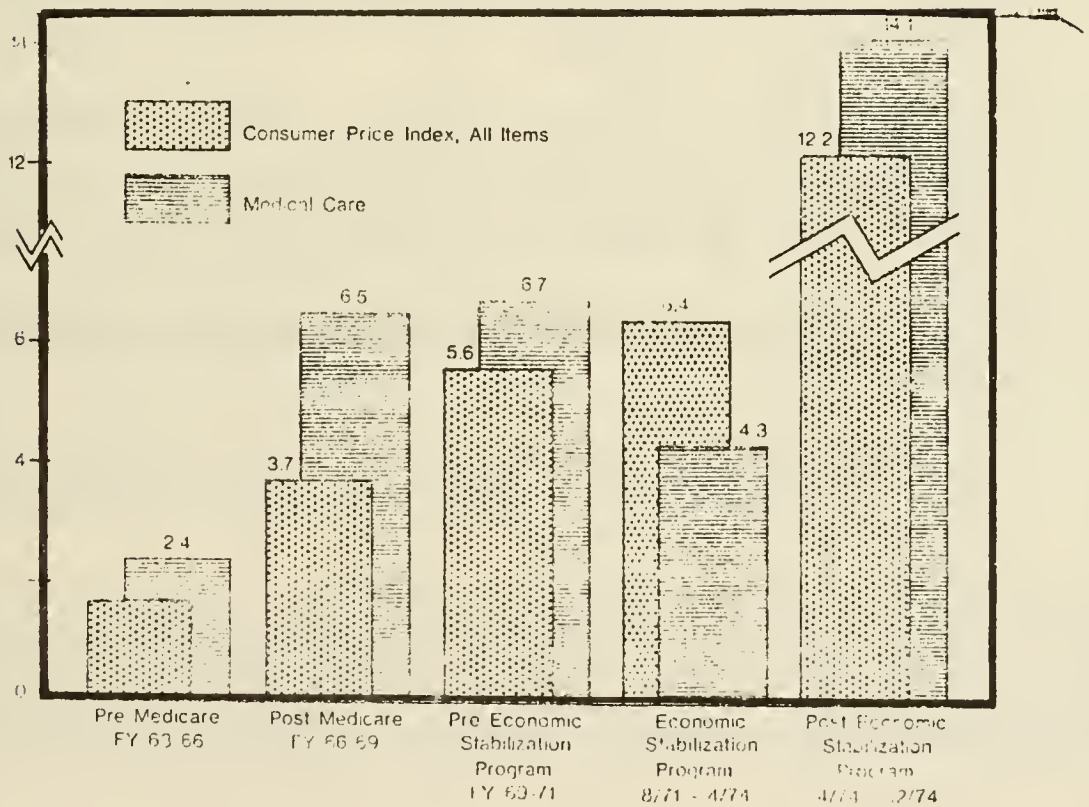
| | Total Admissions | 1975 Same County | % Same County | Total Admissions | 1976 Same County | % Same County |
|---|---|---|---|---|---|---|
| ALL HOSPITALS | | | | | | |
| Northwestern | 32,089 | 24,486 | 76.3% | 33,358 | 24,780 | 74.3% |
| North Central | 26,397 | 20,007 | 75.8% | 26,742 | 20,175 | 75.4% |
| Southwestern | 28,486 | 23,717 | 83.3% | 26,874 | 23,528 | 87.5% |
| South Central | 18,880 | 13,960 | 73.9% | 25,045 | 16,465 | 65.7% |
| Eastern | 15,285 | 12,022 | 78.7% | 14,997 | 11,803 | 78.7% |
| TOTAL: | 121,137 | 94,192 | 77.8% | 127,016 | 96,751 | 76.2% |
| HOSPITALS - 50 Beds or More | | | | | | |
| Northwestern | 22,004 | 15,419 | 70.1% | 23,385 | 15,748 | 67.3% |
| North Central | 23,239 | 17,619 | 75.8% | 23,240 | 17,333 | 74.6% |
| Southwestern | 23,094 | 19,168 | 83.0% | 21,476 | 19,095 | 88.9% |
| South Central | 15,157 | 10,740 | 70.9% | 21,660 | 13,551 | 62.6% |
| Eastern | 6,348 | 4,609 | 72.6% | 5,761 | 4,164 | 72.3% |
| TOTAL: | 89,042 | 67,555 | 75.9% | 95,552 | 69,891 | 73.2% |
| HOSPITALS - Under 50 Beds | | | | | | |
| Northwestern | 10,085 | 9,067 | 89.9% | 9,973 | 9,032 | 90.6% |
| North Central | 3,158 | 2,388 | 75.6% | 3,502 | 2,842 | 81.2% |
| Southwestern | 5,392 | 4,549 | 84.4% | 5,398 | 4,433 | 82.1% |
| South Central | 3,723 | 3,220 | 86.5% | 3,385 | 2,914 | 86.1% |
| Eastern | 8,937 | 7,413 | 82.9% | 9,236 | 7,639 | 82.7% |
| TOTAL: | 31,295 | 26,637 | 85.1% | 31,494 | 26,860 | 85.3% |

TABLE 1 - Percent of Hospital Admissions Arising from the County in which the Facility is located.

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Report, Department of Health and Environmental Sciences, State of Montana

FIGURE 1

AVERAGE ANNUAL INCREASE IN THE CPI AND MEDICAL CARE PRICES
SELECTED PERIODS 1963 - 1974




Source: Social Security Administration, Office of Research and Statistics

The cost of hospitalization within Montana is less than both the national and regional (Mountain State) levels. Nevertheless, the costs of this care are rising at rates similar to the national averages. Table 2 shows the adjusted median expenses per patient days and admissions for 1974, 1975 and 1976.* In this three year period hospitalization costs in Montana appear to have risen between 26.9 and 28.8 percent per patient day and admission, respectively. Appendix B contains the estimated cost per patient day and per admission for each Montana Hospital during 1974, 1975 and 1976.

The American Hospital Association attributes the rise in these costs to a number of factors.[4] These include:

- The number of employees - The number of employees has risen from 178 per 100 patients in 1970 to 339 in 1975 - an increase of 90 percent.

- Salary trends - The average annual salary in community hospitals increased from $5,921 in 1970 to $8,635 in 1975 - an increase of 45.8 percent.

- Non-labor inputs such as insurance, fuel and housekeeping expenses
  The Non-labor Input Index compiled by the American Hospital Association indicates a 66.4 percent increase in the prices of products purchased by hospitals between 1970 and 1975.

- New technology (new equipment and services) - No national figures available on the cost increases attributable to this factor.

- Reliance on Debt Financing - Between 1968 and 1975 hospitals increased their usage of debt financing for capital projects from about 33% to nearly 60% of their total project costs.

Combined with these contributing factors to rising hospital costs is the trend that the number of patient days of hospital care is expected to decrease. This is already occurring nationally, but apparently has not hit Montana. (The number of patient days in Montana hospitals increased from 660,000 to 680,000 between 1975 and 1976.

* The adjusted cost is a formula used by the American Hospital Association to isolate inpatient costs

| MEDIAN | Adjusted Cost Per Patient Day | | | Adjusted Cost Per Admission | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| ALL HOSPITALS: | | | | | | |
| Northwestern | 116.58 | 113.17 | 146.94 | 582.97 | 504.15 | 592.03 |
| North Central | 107.75 | 115.33 | 130.61 | 549.22 | 606.95 | 703.92 |
| Southwestern | 100.66 | 113.52 | 135.68 | 494.22 | 617.91 | 601.77 |
| South Central | 84.51 | 96.98 | 110.78 | 443.55 | 524.55 | 628.47 |
| Eastern | 90.25 | 91.19 | 107.41 | 450.55 | 465.58 | 517.56 |
| STATE: | 97.83 | 106.11 | 124.18 | 469.23 | 520.20 | 604.49 |
| HOSPITALS (50 Beds or More) | | | | | | |
| Northwestern | 120.51 | 129.32 | 168.61 | 629.99 | 641.95 | 812.89 |
| North Central | 107.75 | 115.23 | 134.40 | 548.32 | 606.95 | 731.65 |
| Southwestern | 102.78 | 113.52 | 143.36 | 588.18 | 660.37 | 813.32 |
| South Central | 93.20 | 111.99 | 136.84 | 566.15 | 697.38 | 785.57 |
| Eastern | 90.26 | 94.88 | 114.27 | 464.84 | 521.84 | 617.06 |
| STATE: | 102.79 | 110.28 | 138.32 | 574.56 | 630.30 | 750.74 |
| HOSPITALS (under 50 beds) | | | | | | |
| Northwestern | 94.20 | 99.81 | 130.79 | 414.48 | 449.21 | 510.88 |
| North Central | 117.86 | 122.19 | 122.78 | 588.79 | 625.87 | 649.96 |
| Southwestern | 87.82 | 106.79 | 113.42 | 384.74 | 457.41 | 527.11 |
| South Central | 77.94 | 87.84 | 106.06 | 425.21 | 476.32 | 514.01 |
| Eastern | 90.23 | 86.57 | 106.06 | 439.89 | 439.76 | 490.56 |
| STATE: | 90.38 | 95.10 | 112.44 | 425.84 | 465.39 | 525.95 |

TABLE 2 - Median Adjusted costs per patient day and per admission for Montana Hospitals by subarea and hospital size.

SOURCE:

Furnished by the Montana Hospital Association; based on data submitted to the American Hospital Association in their annual surveys for 1975, 1976 and 1977.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Applications for the construction, addition, or modernization of acute care hospital beds should be financially feasible. In concert with this general guideline, the following criteria are recommended:

- No new general hospitals should be approved unless the applicant can demonstrate that the area in which the proposed hospital will be located is not and cannot be served by existing hospitals.

- Proposed expansion and major modernization plans subject to 1122 or Certificate of Need review must be compatible with the estimated bed need of the service area. These bed need figures, however, are to be used as guidelines and not as standards. When reviewing a proposed application, the committee should consider, look at, and weigh local factors which the estimates cannot and do not take into account.

- In deciding between modernization or replacement the most cost effective solution should be favored.

- Small hospitals (less than 50 beds) should emphasize the use of "swing beds" rather than establishing separate Medical/ Surgical, Obstetrical, and Pediatric Units.* Where and when possible, the swing concept should also be extended to long term care beds. Until legislation is passed permitting the use of swing long term beds, small hospitals should consider developing combination facilities (hospitals - long term facilities - community health centers). In addition, physician clinics should be located in close proximity to the small hospital so that essential support services such as laboratory and x-ray need not be duplicated.

In addition, two organizational and operational concepts which might have the potential to reduce hospital costs should be explored and encouraged - satellite systems and shared services. The satellite system refers to an arrangement with a large urban hospital offering a broad range of medical services with several outlying hospitals providing more routine care. Each member hospital has access to all the professional services available to the system as a whole.

Collaborative arrangements and shared services are not as rigid as the satellite system and may still lead to increased efficiency and improved patient care. Examples of some services which might be shared by two or more hospitals are:

- Central purchasing
- Administration
- Automation and computers
- Dietary
- Engineering
- Laundry
- Library
- In-service education

*Under the swing concept, hospital beds are not allocated to distinct departments. Instead, they are used by the different types of patients as needed.

Although these strategies may not be practical and economical in Montana because of the distances involved, the possibility of establishing such programs should be explored.

### 3.2 Availability

The overall acute inpatient and outpatient service capacity of the hospital system should be equitably distributed and kept in balance with the demonstrated needs of each planning regions' hospitals catchment area, once they are defined by a comprehensive patient origin study.

### 3.3 Accessibility

Hospital services should be distributed to support and promote health care which is accessible to the population being served.

In concert with the proposed national guidelines, it is recommended that general hospital services be within 45 minutes driving time or 30 miles of the population being served.

General hospitals and their medical staffs should work with other health professionals toward the development of primary care, home health and other out-of-hospital community services to improve access to care.

### 3.4 Continuity

Hospitals should be closely linked to other types of levels of care through organized referral and patient transfer arrangements to assist in the provision of a comprehensive range of health services to the community. The development of regional satellite systems linking hospitals, nursing homes, home health agencies, rehabilitation facilities, and outpatient facilities throughout Montana will encourage continuity of care. (See Section 3.1)

### 3.5 Quality

The hospitals in Montana should offer the highest quality and most comprehensive and effective service possible at the most reasonable cost to the patient, in accordance with the attending physician's plan of care for the patient.

Effective and consistent quality assurance and peer review programs should be maintained and stressed in every hospital to ensure proper referral of the patient to a more specialized or, in some cases, a lesser level of care.

## 4.0 Description of the Present Situation

Montana is a rural state with a large land area and small population. Figure 2 shows the location of hospitals in Montana. Geographically, there are 8 counties without a general hospital and 28 [illegible] single hospital. All of these are rural. Four urban counties

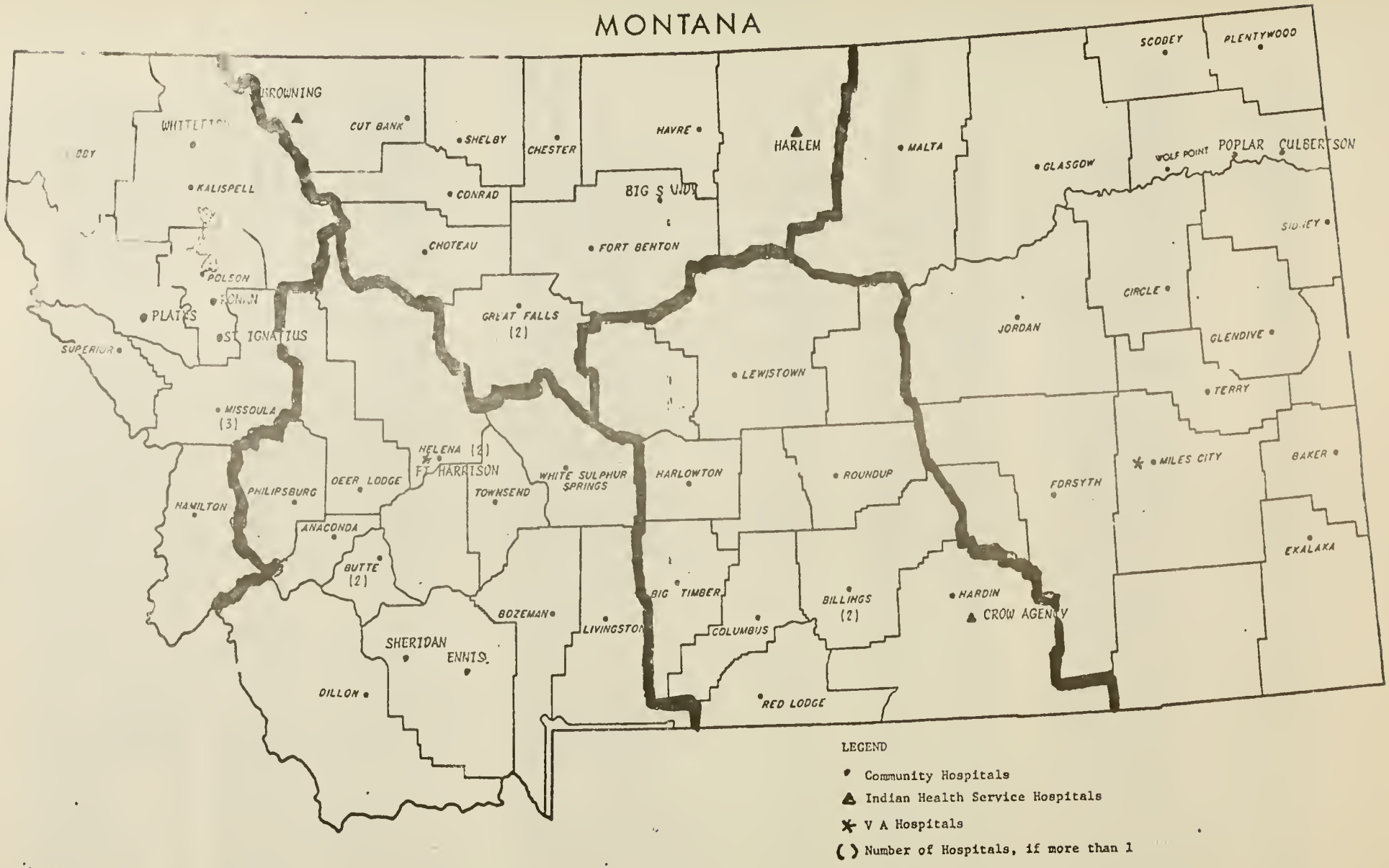



FIGURE 2 - LOCATION OF ACUTE CARE HOSPITALS IN MONTANA

(Cascade, Lewis & Clark, Silver Bow, and Yellowstone) and three rural counties (Chouteau, Flathead and Madison) have two hospitals each. One urban county (Missoula) and two rural (Lake and Roosevelt) each have three hospitals. The urban hospitals are all located in the same city, whereas the rural hospitals are in different communities. In addition, there are two V.A. Hospitals (Helena and Miles City) and three Indian Health Service Hospitals (Browning, Harlem and Crow Agency) which serve special population groups.

Most communities in the State are served by small hospitals. Forty-one percent (25 of the 61) of the community hospitals are currently licensed for 25 or less beds; seventy percent have 50 or less beds. Consequently, much of the remainder of the description of the present situation in Montana compares the larger hospitals (those over 51 beds) with the small hospitals. It is felt that special consideration must be given to these small hospitals and their problems in the Health Systems Plan/State Health Plan.

An inventory of general hospitals in Montana showing the services provided by each hospital is presented in Appendix C.

As a national goal, the Federal Government has specified that the overall bed to 1,000 population ratio should not be more than 4.0. It is estimated that the national average is currently 4.3. In contrast, the ratio for Montana is 4.2*. This statistic varies from subarea to subarea with the highest (4.9) being in Eastern Montana - the subarea with the least population density. It does not include the V.A. and Indian Health Service Hospitals. If these Government owned and operated facilities were included the ratio would be 4.7.

Since 1970, the number of licensed hospital beds in Montana has decreased about 10 percent. In 1970, there were 3,556 licensed beds in Montana; by 1976, there were 3,148. It appears that most of the decline in beds in this period is due to small hospitals converting some of their unused beds to long term beds and to reducing their capacity when rebuilding or modernizing.

Another goal established by the Federal Government is that hospitals should operate at an average minimum occupancy rate of 80 percent.

The proposed national guidelines do make allowances for small rural hospitals having less than 4,000 admissions per year, indicating that occupancy rates of less than 80% may be justified.

*Excluding ICU, CCU and Acute Psychiatric Beds. If these beds were included the ratio for general hospitals in Montana would be 4.6

The proposed guidelines for State Medical Facilities Plans suggest that an optimal occupancy rate can be estimated by the formula:

$$\text{Optimal Occupancy Rate} = \frac{ABS}{ABS + 2.33\sqrt{ABS}} \qquad (1)$$

Where ABS is the average bed size in the planning area.

Table 3 compares the observed annual average occupancy rate in community hospitals for 1976 by subarea with the estimated occupancy rates.* The average occupancy for all hospitals was 55.2 percent with the large hospitals achieving higher rates (60.4 percent) than the smaller ones (43.9 percent). Only three hospitals exceeded (Kalispell Regional, St. Peter's in Helena, St. Vincent's in Billings) their optimal occupancy rate in 1976. National statistics from 1974 indicate that only four other health service areas have average occupancy rates equal to or lower than Montana's.

Four of the five federally run hospitals in Montana also have 1976 occupancy rates which are less than their optimal occupancy. The exception, the Fort Harrison V.A. Center, had an average annual occupancy of 91.0%. As a group, the V.A. hospitals had an overall occupancy of 81.7% while the three Indian Health Service Hospitals reported 46.6%.

The average length of stay in Montana community hospitals in 1976 was 5.4 days, the same as that observed in 1975. In comparison, the IHS hospitals had an average length of stay of 4.8 days; for the V.A. hospitals it was 17.7 days.

It appears that some hospitals have an inordinately large number of patients who are hospitalized for one day or less. Data from the Medicare Discharge File for FY 1974 indicates that about 5.5 percent of the patients ages 65 and older are discharged within a day after admission. Twelve Montana hospitals (21 percent) had 10 percent or more of their Medicare patients stay for one day; eleven of these had less than 50 beds. [6]

In 1976, Montana community hospitals had a use rate of 866 patient days per 1,000 population--well within the national guideline of 1,000 patient days/1,000 population. Even if the federal facilities were included, the use rate would be 983 patient days/1,000 population.

Excluding ICU, CCU and Acute Psychiatric Beds and Utilization

| | Average Bed Size [1] | Optimal Occupancy Rate (%) | Observed 1976 Occupancy Rate [2] (%) |
|---|---|---|---|
| ALL HOSPITALS [3] | | | |
| Northwestern | 56.7 | 76.4 | 55.2 |
| North Central | 70.2 | 78.2 | 57.2 |
| Southwestern | 56.6 | 76.4 | 50.5 |
| South Central | 60.9 | 77.0 | 67.4 |
| Eastern | 29.8 | 70.1 | 47.2 |
| TOTAL: | 52.1 | 75.6 | 55.2 |
| HOSPITALS with more than 50 Beds | | | |
| Northwestern | 111.3 | 81.9 | 60.1 |
| North Central | 183.0 | 85.3 | 60.6 |
| Southwestern | 105 | 81.4 | 53.7 |
| South Central | 188 | 85.4 | 78.9 |
| Eastern | 75.3 | 78.8 | 48.7 |
| TOTAL: | 123.7 | 82.7 | 60.4 |
| HOSPITALS with 50 or less Beds | | | |
| Northwestern | 29.4 | 69.9 | 45.9 |
| North Central | 21.9 | 66.7 | 45.1 |
| Southwestern | 20.4 | 65.9 | 38.3 |
| South Central | 24.5 | 68.0 | 42.1 |
| Eastern | 20.1 | 65.8 | 46.0 |
| TOTAL: | 22.8 | 67.2 | 43.9 |

1) Excluding ICU,CCU & Acute Psychiatric Beds
2) Excluding ICU,CCU & Acute Psychiatric Statistics
3) Does not include government owned and operated facilities

TABLE 3 - Comparison of 1976 Observed and Optimal Occupancy Rates for Montana Hospitals by Sub-area and Hospital Size

SOURCE: The bed size and observed occupancy rates were based upon unpublished data from the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana.

The 1975 Montana State Hospital and Medical Facilities Construction Plan listed a total of 1,448 hospital beds which were nonconforming to federal standards. Table 4 shows the number of beds, by type, which were nonconforming and the number of these which have been replaced or modernized since that time.

As mentioned previously, the expense involved in hospitalization in Montana has risen substantially in recent years. As shown in Table 2, the median adjusted cost per patient day was $124.18, an increase of 17 percent over the previous year. Although it costs somewhat less in the smaller hospitals ($112.44) compared to the larger ones ($138.32), the rates of increase are similar. One might suspect that much of the high cost of care in the small hospitals can be attributed to their lower occupancy rates and high fixed costs.

At the present time, most of the smaller hospitals use swing beds where possible. The larger hospitals in Montana have set up departmental beds. Most of the small rural hospitals do not set aside medical/surgical, maternity and pediatric beds. Instead, they assign them as needed. For those that have allocated beds for specific use, the maternity and pediatric beds experience lower average occupancy rates than do the medical and surgical beds.

The swing concept has not been extended to acute care and long term beds. Medicare and Medicaid reimbursement currently prohibit this. However, in recent years, many of the small Montana hospitals have set up combined, but separate, hospital and long-term care facilities. At this time 28 facilities (46%) provide these dual services and have the same administrator.

Several experiments involving the sharing of services are currently being implemented in Montana. For example, group purchasing of selected items is a service currently being offered by the Montana Hospital Association. In addition, many hospitals within the same area participate in consortiums to provide inservice education to their respective staffs. To date, the satellite concept has been attempted in one or two isolated cases within Montana, but has not been successfully implemented.

The proposed national guidelines address obstetrical (Maternity) and Pediatric units separately. The current status of these units in the larger Montana hospitals is presented in Table 5. Currently, Missoula and Billings have consolidated OB services in one hospital. Both appear to be in compliance with the proposed national guidelines. On the other hand, the cities where more than one hospital offers obstetrical services (Great Falls and Butte) do not satisfy the proposed national guidelines. (2,000 births in SMSA's and 500 in non-SMSA's as well as an annual average occupancy rate of 75%).

| Type of Non-Conformance | Number Non-Conforming (1975) | Number Replaced or Modernized 1) | Percent % |
|---|---|---|---|
| A - (Non-compliance with fire resistance standards) | 451 | 396 | 87.8 |
| B - (Safety of the structure) | 907 | 460 | 50.7 |
| C - (Suitability of Individual Patient Rooms) | 90 | 90 | 100 |
| D - (Relating to other key departments) | 0 | 0 | - |
| TOTAL: | 1,448 | 946 | 65.3% |

1) Includes those currently under construction or having Certificate of Need approved for construction.

TABLE 4 - Current Status of Hospital Beds in Montana which were non-conforming to Federal Standards in 1975.

SOURCE:
The 1975 Montana State Plan Hospital & Medical Facilities Construction, Montana State Department of Health & Environmental Sciences, April 30, 1975 and unpublished data from the Department of Health & Environmental Sciences.

| SERVICE | HOSPITAL | NUMBER OF BIRTHS [1] | (1976) ANNUAL AVERAGE OCCUPANCY |
|---|---|---|---|
| Obstetrical Unit (in SMSA) | St. Vincent's (Billings) | 1900(est) | 58% |
| | Mont. Dea. (Gr. Falls) | 1302 | 61% |
| | Columbus (Great Falls) | 346 | 51% |
| Obstetrical Unit (Non-SMSA) | Northern Montana (Havre) | 408 | 42% |
| | St. Peters (Helena) | 682 | 45% |
| | Silver Bow (Butte) | 202 | 31% |
| | St. James (Butte) | 577 | 43% |
| | Bozeman Dea. (Bozeman) | 533 | 32% |
| | Missoula Comm. (Msla) | 1326 | 90% |
| | Kalispell Regional (Klsp) | 653 | (N/A) |
| | Holy Rosary (Miles City) | 409 | 27% |
| | | NUMBER BEDS | ANNUAL AVERAGE OCCUPANCY (1976) |
| Pediatric Unit | St. Vincent's (Billings) | 28 | 54% |
| | Billings Dea. (Billings) | 32 | 41% |
| | Montana Dea. (Gr. Falls) | 18 | 53% |
| | Columbus (Gr. Falls) | 29 | 42% |
| | Northern Montana (Havre) | 12 | 78% |
| | Shodair (Helena) | 35 | 40% |
| | Silver Bow (Butte) | 10 | 27% |
| | St. James (Butte) | 23 | 41% |
| | Bozeman Dea. (Bozeman) | 7 | 51% |
| | St. Patrick (Msla) | 30 | 31% |
| | Missoula Comm. (Msla) | 10 | 34% |
| | Holy Rosary (Miles City) | 11 | 22% |

1) The number of bassinet admissions is used as a proxy for births

TABLE 5 - Utilization statistics (1976) for obstetrical and pediatric units in selected Montana Hospitals

SOURCE: Unpublished data from the 1976 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana.

As shown in Table 5, only Helena has consolidated pediatric services. None of the hospitals in Missoula, Great Falls, Butte and Billings conform with national guidelines (at least 20 beds and an annual average occupancy rate of at least 65%).

## 4.2 Problems

Based upon the above discussion, the following general problems have been identified:

- Most areas of Montana have an excess of acute-care hospital beds. In 1976, only three general hospitals in Montana had occupancy rates which met or exceeded the levels recommended by proposed guidelines for State Medical Facilities Plans.

- Based upon FY 1974 Medicare data, it appears that an excessive number of patients are hospitalized for a day or less in some hospitals. Because comprehensive convalescent facilities are not available, some patients are staying in hospitals longer for recuperative care. (PSRO has granted a number of "social days" in selected cases for such care).

- Small rural hospitals have special problems which should be addressed in the Health Systems Plan/State Health Plan. Low occupancy rates and high costs threaten their ability to survive. In these small hospitals, the addition or loss of a single physician in their community has a tremendous impact on their utilization statistics.

## 5.0 Estimate of Service Need

Tables 6 through 10 show the estimated number of acute care hospital beds needed in 1985 in each of the service areas (counties) and HSA Subareas. Except where noted, ICU, CCU and Acute Psychiatric Beds and utilization were excluded in making these estimates. In these tables, the bed need is estimated for each hospital by the following formula:

$$\text{Bed Need} = \text{ADC} + 2.33\sqrt{\text{ADC}} \qquad (2)$$

Where ADC = the annual average daily census (the estimated number of patients in the hospital on any given day).

The average daily census is based on the number of patient days reported in 1976 and is adjusted for expected population growth between 1976 and 1985.* Census estimates were used for 1976 population figures. [8] New DCA estimates (medium series) were used to depict 1985 population estimates. [9]

$$* \text{ Adjusted ADC} = \frac{\text{Patient Days}}{365} \times \frac{\text{Pop (1985)}}{\text{Pop (1976)}}$$

| COUNTY | HOSPITAL | PATIENT DAYS (1976) | ADJUSTED AVERAGE DAILY CENSUS (1985) | 1985 ESTIMATED BED NEED (HOSPITAL) |
|---|---|---|---|---|
| Lincoln | St. John's Lutheran | 3,602 | 10.0 | 17 |
| Flathead | Kalispell Regional | 26,562 | 90.4 | 113 |
| | North Valley | 8,866 | 30.2 | 43 |
| Sanders | Clark Fork Valley | 4,024 | 13.2 | 22 |
| Lake | St. Joseph's | 5,612 | 17.6 | 27 |
| | St. Luke Comm. | 3,732 | 11.7 | 20 |
| | Mission Valley | 2,821 | 8.8 | 16 |
| Mineral | Mineral County | 1,033 | 3.5 | 8 |
| Ravalli | Marcus Daly Mem. | 9,704 | 30.3 | 43 |
| Missoula | Missoula General | 7,772 | 25.4 | 37 |
| | Missoula Community | 23,294[1)] | 76.2 | 97 |
| | St. Patrick | 39,917 | 130.6 | 157 |

1) ICU & CCU Patient Days Included

TABLE 6 - Estimated Bed Need in 1985 in Northwestern Montana (by Hospitals)

| COUNTY | HOSPITAL | PATIENT DAYS (1976) | ADJUSTED AVERAGE DAILY CENSUS (1985) | 1985 ESTIMATED BED NEED (HOSPITAL) |
|---|---|---|---|---|
| Glacier | Glacier Co. Mem. | 3,095 | 10.3 | 18 |
| | PHS Indian Hosp [2] (Browning) | 5,628 | 17.0 | 27 |
| Toole | Toole County | 3,662 | 9.8 | 17 |
| Pondera | Pondera County | 7,936 | 23.3 | 35 |
| Teton | Teton Memorial | 3,441 | 12.2 | 20 |
| Cascade | Montana Deaconess | 49,171 | 142.3 | 170 |
| | Columbus | 48,177 | 139.4 | 167 |
| Chouteau | Chouteau Co. Dist. | 1,999[1] | 9.8 | 17 |
| | Big Sandy | 1,661 | 4.8 | 10 |
| Hill & Blaine | Northern Montana | 24,095 | 69.4 | 89 |
| | Fort Belknap PHS [2] (Harlem) | 2,449 | 7.1 | 13 |
| Liberty | Liberty County | 1,976 | 5.8 | 11 |

1) Effective May, 1976
2) Government owned and operated facility

TABLE 7 - Estimated Bed Need in 1985 in North Central Montana (by Hospitals)

| COUNTY | HOSPITAL | PATIENT DAYS (1976) | ADJUSTED AVERAGE DAILY CENSUS (1985) | 1985 ESTIMATED BED NEED (HOSPITAL) |
|---|---|---|---|---|
| Beaverhead | Barrett Memorial | 3,492 | 10.6 | 18 |
| Madison | Ruby Valley | 2,104 | 6.0 | 12 |
| | Madison Valley | 2,066 | 5.9 | 12 |
| Gallatin | Bozeman Deaconess | 21,992 [1] | 71.0 | 91 |
| Lewis & Clark & Jefferson | St. Peter's | 34,571 | 116.2 | 141 |
| | Shodair Crippled Children's | 5,161 | 17.4 | 27 |
| | V.A. Center (Fort Harrison) [2] | 51,183 | 160.0 [3] | 189.5 |
| Broadwater | Broadwater | 2,109 | 6.3 | 12 |
| Meagher | Mountain View | 982 | 2.7 | 7 |
| Silver Bow | St. James Comm. | 34,473 | 102.3 | 126 |
| | Silver Bow Gen. | 14,416 | 42.8 | 58 |
| Deer Lodge | Comm. Hospital of Anaconda | 8,869 | 25.8 | 38 |
| Powell | Powell Co. Mem. | 6,091 | 19.8 | 30 |
| Granite | Granite Co. Mem. | 798 [1] | 2.3 | 6 |
| Park | Livingston Mem. | 9,058 | 28.8 | 41 |

1) Includes ICU/CCU Patient Days
2) Government owned and run facility
3) Expected change in the entire state's population was used to adjust the average daily census for the V.A. Hospital

TABLE 8 - Estimated Bed Need in 1985 in Southwestern Montana (By Hospitals)

| COUNTY | HOSPITAL | PATIENT DAYS (1976) | ADJUSTED AVERAGE DAILY CENSUS (1985) | 1985 ESTIMATED BED NEED (HOSPITAL) |
|---|---|---|---|---|
| Fergus, Petroleum & Judith Basin | Central Montana | 9,331 | 26.5 | 38 |
| Wheatland & Golden Valley | Wheatland Mem. | 2,349 | 5.1 | 10 |
| Musselshell | Roundup Memorial 1) | 2,114 | 6.3 | 12 |
| Sweet Grass | Sweet Grass Comm. | 1,497 | 3.7 | 8 |
| Stillwater | Stillwater Comm. | 4,148 2) | 13.3 | 22 |
| Carbon | Carbon Co. Mem. | 4,269 | 12.5 | 21 |
| Big Horn | Big Horn Co. | 2,707 | 9.8 | 17 |
| | PHS Indian Hosp. (Crow Agency) 3) | 6,559 | 20.7 | 31 |
| Yellowstone | Billings Deaconess | 46,064 | 159.8 | 189 |
| | St. Vincent's | 62,275 | 216.0 | 250 |

1) Currently Closed
2) Includes ICU/CCU Patient Days
3) Government owned and operated facility

TABLE 9 - Estimated Bed Need in 1985 in South Central Montana (by Hospitals)

| COUNTY | HOSPITAL | PATIENT DAYS (1976) | ADJUSTED AVERAGE DAILY CENSUS (1985) | 1985 ESTIMATED BED NEED (HOSPITAL) |
|---|---|---|---|---|
| Valley | Frances Mahon Dea. | 9,354 | 31.2 | 44 |
| Daniels | Daniels Memorial | 1,787 | 4.7 | 10 |
| Sheridan | Sheridan Memorial | 5,765 | 14.6 | 24 |
| Roosevelt | Roosevelt Memorial | 2,627 | 7.7 | 14 |
| | Trinity | 7,644 | 22.5 | 34 |
| | Poplar Community | 3,423 | 10.1 | 17 |
| McCone | McCone County | 3,055 | 8.1 | 15 |
| Garfield | Garfield County | 316 | 0.9 | 3 |
| Richland | Community Memorial | 12,006 | 38.6 | 53 |
| Dawson & Wibaux | Glendive Community | 9,442 | 29.5 | 42 |
| Rosebud & Treasure | Rosebud Community | 3,773 | 11.5 | 19 |
| Custer & Powder River | Holy Rosary | 18,841 | 55.3 | 73 |
| | V.A. Hospital (Miles City)[1] | 22,150 | 69.2[2] | 89 |
| Prairie | Prairie Community | 1,023 | 3.1 | 7 |
| Phillips | Malta Hospital | 6,483 | 18.7 | 29 |
| Fallon | Fallon Memorial | 1,828 | 5.5 | 11 |
| Carter | Dahl Memorial | 2,125 | 6.1 | 12 |

1) Government owned and operated facility
2) Expected change in the entire State's population was used to adjust the average daily census for the V.A. Hospital

TABLE 10 - Estimated Bed Need in 1985 in Eastern Montana (by Hospitals)

The model being used (Equation 2) See page 16, is based upon the probability that an unoccupied bed will be available 99% of the time when needed. It assumes that the daily census is distributed by a Poisson Distribution and that fluctuations occur around the average.

It is emphasized that these bed need estimates are extremely tenuous. For larger hospitals, the catchment areas extend beyond their local counties. They often serve as referral centers for the smaller hospitals in their immediate area. It is hoped that a periodic patient origin study will assist in developing estimates for these catchment areas. For small hospitals which primarily serve their immediate community, the acquisition or loss of a staff physician will have a tremendous impact of their utilization statistics, nevertheless these estimates are helpful in determining where additional beds are needed and where substantial excess capacity may exist.

At this time, because Montana has no population based data system, it is felt that the national goal of 4.0 beds per 1,000 population can only be applied at the state and regional levels. It cannot be used for local guidelines, except to identify potential areas of substantial excess capacity.

Tables 11 through 15 show the difference between the number of acute hospital beds currently licensed and the estimated number needed. Special care (ICU, CCU and Acute Psychiatric) beds are subtracted out. In addition, approvals which have been granted for some hospitals are incorporated in the statistics. (In most cases, the facilities under construction have been approved for a somewhat reduced capacity.)

Tables 11 through 15 are tabulated by service area (county). The bed need estimates for all hospitals in the service area (shown in Tables 6 through 10) have been added to obtain an overall bed need estimate. Government owned and operated facilities are not included in these latter tables.

It appears that three areas of the State (Flathead, Lewis & Clark, and Yellowstone Counties) will need to consider building additional hospital beds in the next five years to meet the demand which will be placed on them by 1985.

On the other hand, most of the other areas appear to have substantial excess capacity. Those with 20 or more surplus beds include:

Lake County
Missoula County
Cascade County
Hill and Blaine Counties
Silver Bow County
Deer Lodge County
Custer and Powder River Counties

| COUNTY | BEDS CURRENTLY LICENSED | SPECIAL CARE BEDS | NET BED COMPLEMENT | 1985 ESTIMATED BED NEED (COUNTY) | 1985 DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Lincoln | 34 | 2 | 32 | 17 | (15) |
| Flathead | 135 | 4[1)] | 131 | 156 | 25 |
| Sanders | 20 | 2 | 18 | 22 | 4 |
| Lake | 95 | 4 | 91 | 63 | (28) |
| Mineral | 10 | 2 | 8 | 8 | 0 |
| Ravalli | 48 | 2 | 46 | 43 | ( 3) |
| Missoula | 389 | 35[2)] | 354[2)] | 291 | (63) |
| TOTAL | 731 | 51 | 680 | 600 | (80) |

1) Kalispell Regional Hospital has 7 unlicensed ICU/CCU Beds

2) Statistics from Missoula Community Hospital include ICU/CCU patient days, thus their 4 ICU/CCU Beds are included in the Net Bed Complement.

TABLE 11 - Comparison between the 1985 estimated need for general hospital beds and current number of beds in Northwestern Montana (by county)

| COUNTY | BEDS CURRENTLY LICENSED | SPECIAL CARE BEDS | NET BED COMPLEMENT | 1985 ESTIMATED BED NEED (COUNTY) | 1985 DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Glacier[1)] | 20 | 2 | 18 | 18 | 0 |
| Toole | 30 | 2 | 28 | 17 | (11) |
| Pondera | 50 | 2 | 48 | 35 | (13) |
| Teton | 20 | 0 | 20 | 20 | 0 |
| Cascade[2)] | 473 | 59 | 414 | 337 | (77) |
| Chouteau | 26 | 0 | 26 | 27 | 1 |
| Hill & Blaine[1)] | 120 | 7 | 113 | 89 | (24) |
| Liberty | 11 | 0 | 11 | 11 | 0 |
| TOTAL | 750 | 72 | 678 | 554 | (124) |

1) Does not include the Indian Health Service Hospital run by the Public Health Service

2) Columbus Hospital is currently licensed for 213 beds; they will be moving to a new 191 Bed Facility shortly. The 191 - 14 ICU Beds = 171 general hospital beds was used

TABLE 12 - Comparison between the 1985 estimated need for General Hospital Beds and current number of beds in North Central Montana (by county)

| COUNTY | BEDS CURRENTLY LICENSED | SPECIAL CARE BEDS | NET BED COMPLEMENT | 1985 ESTIMATED BED NEED (COUNTY) | 1985 DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Beaverhead | 31 | 2 | 29 | 18 | (11) |
| Madison | 31 | 3 | 28 | 24 | ( 4) |
| Gallatin | 104 | 0[1)] | 104 | 91 | (13) |
| Lewis & Clark[2)] Jefferson | 148 | 9 | 139 | 168 | 29 [6)] |
| Broadwater | 21 | 1 | 20 | 12 | ( 8) |
| Meagher | 8 | 0 | 8 | 7 | ( 1) |
| Silver Bow | 320 | 14[3)] | 306 | 184 | (122) |
| Deer Lodge | 60 | 2 | 58 | 38 | (20) |
| Powell | 35 | 2 | 33 | 30 | ( 3) |
| Granite | 10 | 0[4)] | 10 | 6 | ( 4) |
| Park | 54 | 4 | 50 | 41 | ( 9) |
| TOTAL | 822 | 37 | 785 | 619 | (166) |

1) Bozeman Deaconess has 5 ICU/CCU beds but do not separate its ICU/CCU statistics
2) Does not include the VA Center at Fort Harrison
3) St. James Community intends to expand its ICU/CCU capacity from 2 to 12 beds
4) Granite County has 1 ICU/CCU bed but does not separate its ICU/CCU statistics
5) St. Peters is currently operating under a temporary license which gives them 30 beds more than their 114 bed permanent license for a total of 144 beds.
6) From an institutional perspective, St. Peters needs 39 beds and Shodair Crippled Children's has 8 extra beds.

TABLE 13 - Comparison between the 1985 estimated need for General Hospital Beds and the current number of beds in Southwestern Montana (by county)

| COUNTY | BEDS CURRENTLY LICENSED | SPECIAL CARE BEDS | NET BED COMPLEMENT | 1985 ESTIMATED BED NEED (COUNTY) | 1985 DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Fergus, Petroleum & Judith Basin | 47 | 5 | 42 | 38 | ( 4) |
| Wheatland & Golden Valley | 25 | 0 | 25 | 10 | (15) |
| Musselshell | 17[1)] | 0 | 17[1)] | 12 | ( 5) |
| Sweet Grass | 17 | 1 | 16 | 8 | ( 8) |
| Stillwater | 27 | 0[2)] | 27 | 22 | ( 5) |
| Carbon | 28 | 2 | 26 | 21 | ( 5) |
| Big Horn | 16[3)] | 0 | 16 | 17 | 1 |
| Yellowstone | 412 | 36[4)] | 376 | 439 | 63 |
| TOTAL | 589 | 44 | 545 | 567 | 22 |

1) Currently closed
2) Stillwater Community Hospital has 2 ICU/CCU beds but does not separate its ICU/CCU statistics
3) Does not include the IHS Hospital at Crow Agency
4) St. Vincent's has 24 unlicensed ICU/CCU beds which are not included

TABLE 14 - Comparison between the 1985 estimated need for General Hospital Beds and the current number of beds in South Central Montana (by county)

| COUNTY | BEDS CURRENTLY LICENSED | SPECIAL CARE BEDS | NET BED COMPLEMENT | 1985 ESTIMATED BED NEED (COUNTY) | 1985 DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Valley | 54[1)] | 4 | 50 | 44 | ( 6) |
| Daniels | 11 | 0 | 11 | 10 | ( 1) |
| Sheridan | 21[2)] | 1 | 20 | 24 | 4 |
| Roosevelt | 78[3)] | 0 | 78 | 65 | (13) |
| McCone | 20 | 0 | 20 | 15 | ( 5) |
| Garfield | 8 | 1 | 7 | 3 | ( 4) |
| Richland | 55 | 4 | 51 | 53 | 2 |
| Dawson & Wibaux | 46 | 3 | 43 | 42 | ( 1) |
| Rosebud & Treasure | 26 | 2 | 24 | 19 | ( 5) |
| Custer & Powder River | 120[4)] | 7 | 113 | 73 | (40) |
| Prairie | 8 | 1 | 7 | 7 | 0 |
| Phillips | 30 | 1 | 29 | 29 | 0 |
| Fallon | 19 | 3 | 16 | 11 | ( 5) |
| Carter | 16 | 0 | 16 | 12 | ( 4) |
| TOTAL | 512 | 27 | 485 | 407 | (78) |

1) Frances Mahon Deaconess hospital is preparing to move into a new facility having 54 beds
2) Sheridan Memorial is planning to move into a new, 21 bed facility

3) Roosevelt Memorial is planning to move into a new 14 bed facility
4) Does not include the VA Center in Miles City

[redacted] 1 Comparison twe[redacted]he [redacted] es[redacted]ated [redacted]ed [redacted]Gen[redacted] Ho[redacted]tal [redacted]s a[redacted]he [redacted]rent [redacted]mbe[redacted]
of b[redacted]s in [redacted]ster[redacted]onta[redacted] (by [redacted]unty)

Most of these are also areas with more than one hospital. Although it would appear that alternative uses for some of these facilities could be explored and possibly implemented without reducing the accessibility of hospital services, no specific recommendations are being made to close any facility. A crude analysis of the potential savings to be realized by closing selected small hospitals indicates that the savings would be approximately equal to the closed hospital's annual payroll. This analysis assumes that adjacent hospitals would serve the patients currently served by the closed facility and does not take into account such negative factors as paying off the debt retirement and other fixed overhead costs of the closed facility, local economic impact (multiplier effect of lost wages from the local economy) and the potential that the remaining hospitals will have to increase personnel to handle the increased load.

It does appear, however, that consolidation of some services (e.g. Obstetrical and Pediatric) is feasible and would yield some savings in communities where they are currently duplicated.

In those communities with only one hospital and still having excess beds, it is suggested that a long range policy of reducing hospital capacity through the review process be continued. In recent years, many smaller hospitals have opted to reduce their bed size as they begin replacement and modernization programs. In addition, with other services (e.g. alcoholism, rehabilitation and psychiatric) obtaining more stable reimbursement, some of these facilities should consider developing these services with existing resources.

## REFERENCES


1) Montana State Department of Health & Environmental Sciences, Hospital and Medical Facilities Division, Montana State Plan, Hospital & Medical Facilities Construction, 1975.

2) U.S. Department of Health, Education & Welfare, Public Health Service, Forward Plan For Health FY 1977-B1, June, 1975.

3) The Size & Shape of the Medical Care Dollar, U.S. DHEW Publication No. (SSA) 76-11910.

4) American Hospital Association, 1977 Hospital Costs Interpretation Kit.

5) U.S. Department of Health, Education & Welfare, Public Health Service, Health Resources Administration. Draft Initial Statement National Health Policy Planning Guidelines (Section 1501, National Health Planning & Resources, Development Act of 1974, Oct. 1976.

6) Memo to State Health Planning & Development Agencies & Health Systems Agencies From Director Division of Health Insurance Studies, ORS & Director, Bureau of Health Planning & Resources Development HRA, Data from the National Medicare Discharge File and Utilization of Short Stay Hospitals by Medicare Patients 65 Years & Older: Data from the National Medicare Discharge File, March 28, 1977.

7) Montana State Plan, Hospital & Medical Facilities Construction, Op. Cit.

8) U.S. Department of Commerce, Bureau of the census. Estimates of the Population of Montana Counties and Metropolitan Areas, July 1, 1975 (Revised) and 1976 (Provisional) series P-26, No. 76-26, Issued July, 1977.

9) Division of Research & Information Systems, Montana Population Projections 1975-2000, Montana Department of Community Affairs, Capitol Station, Helena, Montana 59601, Aug. 1977.

# APPENDIX A

## PATIENT ORIGIN DATA BY HOSPITAL

## FOR 1975 and 1976

PATIENT ORIGIN

| | Total Admiss. | 1975 Same County | % Same County | Total Admiss. | 1976 Same County | % Same County |
|---|---|---|---|---|---|---|
| St John's Lutheran Hosp. | 1,017 | 976 | 96.0 | 1,028 | 1,004 | 97.7 |
| Kalispell Regional Hosp. | 5,797 | 4,609 | 79.5 | 6,534 | 4,750 | 72.7 |
| North Valley Hosp. | 2,233 | 1,918 | 85.9 | 2,047 | 1,744 | 85.2 |
| Clark Fork Valley Hosp. | 1,028 | 894 | 87.0 | 1,153 | 1,031 | 89.4 |
| St. Joseph Hosp. | 1,503 | 1,290 | 85.8 | 1,504 | 1,313 | 87.3 |
| St. Luke Community Hosp. | 1,188 | 1,138 | 95.8 | 784 | 757 | 96.6 |
| Mission Valley | 1,107 | 953 | 86.1 | 924 | 794 | 85.9 |
| Mineral County Hosp. | 44 | 41 | 93.2 | 385 | 338 | 87.8 |
| -Missoula Community Hosp. | 6,651 | 4,749 | 71.4 | 7,299 | 5,168 | 70.8 |
| Missoula General Hosp. | 1,503 | 876 | 58.3 | 1,368 | 726 | 53.1 |
| St. Patrick Hosp. | 8,053 | 5,185 | 64.4 | 8.184 | 5,104 | 62.4 |
| Marcus Daly Memorial Hosp | 1,965 | 1,857 | 94.5 | 2,148 | 2,051 | 95.5 |
| | 32,089 | 24,486 | 76.3 | 33,358 | 24,780 | 74.3 |

TABLE A-1 Precent of Northwest Montana Patient Admissions Arising from the County in which the Hospital is Located.

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

PATIENT ORIGIN

| HOSPITAL | 1975 Total Admissions | 1975 Same County | 1975 % Same County | 1976 Total Admissions | 1976 Same County | 1976 % Same County |
|---|---|---|---|---|---|---|
| Barrett Memorial Hospital (Dillon) | 895 | 814 | 90.9 | 834 | 763 | 91.5 |
| Ruby Valley Hospital (Sheridan) | 519 | 371 | 71.5 | 563 | 346 | 61.4 |
| Madison Valley Hospital (Ennis) | 391 | 251 | 64.2 | 428 | 293 | 68.5 |
| Bozeman Deaconess Hospital (Bozeman) | 4,672 | 3,743 | 80.1 | 4,872 | 3,827 | 78.6 |
| St. Peters Hospital (Helena) | 6,047 | 5,062 | 83.7 | 4,975 | 5,992 | 83.0 |
| Shodair Crippled Childrens Hospital (Helena) | 1,331 | 1,155 | 86.8 | 1,352 | 1,111 | 82.2 |
| Broadwater Hospital (Townsend) | 410 | 310 | 75.6 | 466 | 370 | 79.4 |
| Mountainview Memorial Hospital White Sulphur Springs) | 273 | 265 | 97.1 | 182 | 165 | 90.7 |
| Granite County Memorial Hospital (Philipsburg) | 201 | 190 | 94.5 | 192 | 182 | 94.8 |
| Powell County Memorial Hospital (Deer Lodge) | 1,372 | 1,193 | 87.0 | 1,381 | 1,203 | 87.1 |
| St. James Community Hospital(Butte) | 6,755 | 5,360 | 79.3 | 7,556 | 5,684 | 75.2 |
| Silver Bow General Hosp. (Butte) | 3,205 | 2,745 | 85.6 | 1) N/A | 1) N/A | 1) N/A |
| Community Hospital of Anaconda (Anaconda) | 2,415 | 2,258 | 93.5 | 2,119 | 1,957 | 92.4 |
| Livingston Memorial Hosp. (Livingston) | 1) N/A | 1) N/A | 1) N/A | 1,954 | 1,635 | 83.7 |
| | 28,486 | 23,717 | 83.3% | 26,874 | 23,528 | 87.5% |

1) Not Available

TABLE A-3 Percent of Southwestern Montana Patient Admissions Arising from the County in which the Hospital is Located.

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Report, Department of Health and Environmental Sciences, State of Montana

## PATIENT ORIGIN

| HOSPITAL | Total Admissions | 1975 Same County | % Same County | Total Admissions | 1976 Same County | % Same County |
|---|---|---|---|---|---|---|
| Glacier County Memorial | 640 | 461 | 72.0 | 831 | 746 | 89.8 |
| Toole County Hospital | 868 | 719 | 82.8 | 798 | 662 | 83.0 |
| Pondera County Hospital | 1,771 | 1,261 | 71.2 | 1,897 | 1,317 | 69.4 |
| Teton Memorial Hospital | 725 | 501 | 69.1 | 750 | 563 | 76.5 |
| Montana Deaconess | 12,654 | 9,816 | 77.6 | 12,336 | 9,442 | 65.5 |
| Columbus Hospital | 8,814 | 6,542 | 74.2 | 9,007 | 6,574 | 73.0 |
| Choteau County District Hospital | 242 | 259 | 93.4 | 416 | 397 | 95.4 |
| Big Sandy Medical Center | 320 | 264 | 82.5 | 346 | 302 | 87.3 |
| Northern Montana Hospital | N/A 1) | N/A 1) | N/A 1) | N/A 1) | N/A 1) | N/A 1) |
| Liberty County Hospital | 363 | 184 | 50.6 | 361 | 172 | 47.6 |
| | 26,397 | 20,007 | 75.8 | 26,742 | 20,175 | 75.4 |

1) Not available; Data not collected

TABLE A-2 Percent of North Central Montana Patient Admissions Arising from the County in which the Hospital is Located

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

| HOSPITAL | PATIENT ORIGIN 1975 Total Admissions | 1975 Same County | % Same County | 1976 Total Admissions | 1976 Same County | % Same County |
|---|---|---|---|---|---|---|
| Central Montana Hospital | 1,840 | 1,604 | 87.2 | 1,826 | 1,612 | 88.3 |
| Meatland Memorial Hospital | 513 | 366 | 71.3 | 467 | 338 | 72.4 |
| Roundup Memorial Hospital | 624 | 519 | 83.2 | 324 | 286 | 88.3 |
| Stillwater Community Hospital | 676 | 564 | 83.4 | 738 | 625 | 84.7 |
| Sweetgrass Community Hospital | 224 | 206 | 92.0 | 263 | 238 | 90.5 |
| Carbon County Memorial | 1,036 | 1,006 | 97.1 | 871 | 850 | 97.6 |
| Big Horn County Memorial | 650 | 559 | 86.0 | 722 | 577 | 79.9 |
| Billings Deaconess | 7,189 | 4,490 | 62.5 | 7,518 | 4,576 | 60.9 |
| St. Vincents Hospital | 6,128 1) | 4,646 1) | 75.8 1) | 12,316 | 7,363 | 62.0 |
| | 18,880 | 13,960 | 73.9 | 25,045 | 16,465 | 65.7 |

1) First six months in 1975

TABLE A-4 Percent of South Central Montana Patient Admissions Arising from the County in which the Hospital is Located

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Reports, Department of Health & Environmental Sciences, State of Montana

| HOSPITAL | PATIENT ORIGIN | | | | | |
|---|---|---|---|---|---|---|
| | Total Admissions | 1975 Same County | % Same County | Total Admissions | 1976 Same County | % Same County |
| Malta Hospital (Malta) | 1091 | 1020 | 93.5 | 1075 | 1008 | 93.8 |
| Frances Mahon Deaconess Hospital (Glasgow) | 1) N/A | 1) N/A | 1) N/A | 1) N/A | 1) N/A | 1) N/A |
| Daniels Memorial Hosp. (Scobey) | 356 | 323 | 90.7 | 350 | 321 | 91.7 |
| Sheridan Memorial Hosp. (Plentywood) | 966 | 841 | 87.1 | 995 | 838 | 84.2 |
| Roosevelt Memorial Hosp. (Culbertson) | 625 | 511 | 81.8 | 477 | 382 | 80.1 |
| Trinity Hosp. (Wolf Pt.) | 1490 | 1037 | 69.6 | 1362 | 943 | 69.2 |
| Poplar Comm. Hosp. (Poplar) | 948 | 921 | 97.2 | 891 | 865 | 97.1 |
| Garfield Co. Hosp. (Jordan) | 67 | 57 | 85.1 | 69 | 66 | 95.7 |
| McCone Co. Hosp.(Circle) | 707 | 486 | 68.7 | 695 | 503 | 72.4 |
| Community Memorial Hosp. (Sidney) | 2805 | 2558 | 91.2 | 2456 | 2104 | 85.7 |
| Glendive Comm. Hosp. (Glendive) | 1789 | 1436 | 80.5 | 1872 | 1516 | 81.0 |
| Rosebud Comm. Hosp. (Forsyth) | 738 | 637 | 86.3 | 901 | 758 | 84.1 |
| Fallon Memorial Hosp. (Baker) | 1) N/A | 1) N/A | 1) N/A | 1) N/A | 1) N/A | 1) N/A |
| Dahl Memorial Hosp. (Ekalaka) | 1) N/A | 1) N/A | 1) N/A | 385 | 296 | 76.9 |
| Holy Rosary Hosp. (Miles City) | 3543 | 2051 | 57.9 | 3305 | 2060 | 62.3 |
| Prairie Community Hosp. (Terry) | 160 | 144 | 90.0 | 164 | 143 | 87.2 |
| TOTAL | 15,285 | 12,022 | 78.7% | 14,997 | 11,803 | 78.7% |

1) Not available; data not reported

TABLE A-5 Percent of Eastern Montana Patient Admissions Arising from the County in which the Hospital is Located

SOURCE: Unpublished data from the 1975 & 1976 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

## APPENDIX B

Adjusted Expenses Per Patient Day and Per Admission

For Montana Hospitals in 1974, 1975 and 1976

The adjusted cost per patient day and per admission for a given year were calculated by the following formulas:

$$\text{Adjusted Expenses/Inpatient Day} = \frac{\text{Total Expenses}}{\text{Inpatient Days} + \text{Outpatient Visits}\left(\frac{\text{Gross Outpt. Revenue per Outpt. Visit}}{\text{Gross Inpt. Revenue per Inpt. Day}}\right)}$$

$$\text{Adjusted Expenses/Outpatient Visit} = \frac{\text{Total Expenses}}{\text{Outpatient Visits} + \text{Inpatient Days}\left(\frac{\text{Gross Inpt. Revenue per Inpt. Day}}{\text{Gross Outpt. Revenue per Outpt. Visit}}\right)}$$

| NORTHWEST | Adjusted Cost Per Patient Day | | | Adjusted Cost Per Admissio | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| LINCOLN: | | | | | | |
| St. John's Lutheran Hospital | 184.77 | 113.17 | 119.08 | 794.51 | 497.95 | 479. |
| FLATHEAD: | | | | | | |
| Kalispell Regional | 121.63 | 113.67 | 138.81 | 583.82 | 534.25 | 657. |
| North Valley Hospital | 79.02 | 99.81 | 122.44 | 395.10 | 509.03 | 613. |
| SANDERS: | | | | | | |
| Clark Fork Valley | 1) 136.78 | 125.41 | 149.49 | 1) 588.15 | 504.15 | 529 |
| LAKE: | | | | | | |
| St.Joseph Hospital | 94.20 | 96.16 | 112.72 | 414.48 | 432.72 | 495 |
| St. Luke Community | 55.90 | 65.69 | 109.15 | 279.50 | 282.47 | 526. 0 |
| Holy Family Hospital | 108.79 | 140.82 | 151.38 | 424.28 | 449.21 | 478.36 |
| MINERAL: | | | | | | |
| Mineral County | Not Rept.d | Not Rept.d | 1 302.02 | Not Rept.d | Not Rept.d | 1) 1057.07 |
| RAVALLI: | | | | | | |
| Marcus Daly Memorial | 76.84 | 83.59 | 104.00 | 322.73 | 376.16 | 483.60 |
| MISSOULA: | | | | | | |
| Missoula Community | 129.55 | 146.85 | 190.21 | 582.97 | 631.46 | 703 |
| Missoula General | 119.39 | 108.74 | 175.17 | 704.40 | 652.44 | 1026.00 |
| St. Patricks | 116.58 | 144.97 | 162.04 | 676.16 | 826.33 | 922 |
| AVERAGE: | 111.22 | 112.63 | 156.27 | 524.19 | 517.83 | 676.09 |
| MEDIAN | 116.58 | 113.17 | 146.94 | 582.97 | 504.15 | 592 |

1) Estimated by Montana Hospital Association

SOURCE: Furnished by the Montana Hospital Association; based on data submitted to the American Hospital Association in their annual survey for 1975, 1976 and 1977.

TABLE B-1
Northwestern Montana Hospitals

| NORTH CENTRAL | ADJUSTED COST PER PATIENT DAY | | | ADJUSTED COST PER ADMISSION | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| GLACIER: | | | | | | |
| Glacier County Mem. | 1) 102.49 | 1) 319.47 | 132.00 | 1) 471.45 | 1) 1348.16 | 607.20 |
| TOOLE: | | | | | | |
| Toole County Hospital | 1) 133.23 | 152.42 | 174.96 | 1) 706.12 | 746.86 | 857.30 |
| PONDERA: | | | | | | |
| Pondera County Hosp. | 109.22 | 118.84 | 126.85 | 469.65 | 541.91 | 579.70 |
| TETON: | | | | | | |
| Teton Memorial Hosp. | 71.60 | 91.96 | 99.90 | 436.76 | 500.26 | 469.53 |
| CASCADE: | | | | | | |
| Montana Deaconess | 106.27 | 111.81 | 129.22 | 626.99 | 671.98 | 748.18 |
| Columbus Hospital | 117.67 | 126.63 | 139.58 | 780.15 | 782.57 | 806.77 |
| CHOTEAU: | | | | | | |
| Choteau County Distric Hospital | 1) 192.97 | 152.65 | 142.20 | 1) 1003.44 | 870.10 | 725.22 |
| Big Sandy Medical Center | 71.03 | 70.89 | 58.03 | 348.05 | 319.00 | 273.92 |
| HILL: | | | | | | |
| Northern Montana | 99.02 | 103.71 | 142.17 | 465.39 | 518.55 | 715.12 |
| LIBERTY: | | | | | | |
| Liberty County | 1) 228.67 | 87.50 | 113.56 | 1) 1715.03 | 504.88 | 692.72 |
| AVERAGE: | 123.22 | 133.59 | 125.85 | 702.30 | 680.43 | 643.97 |
| MEDIAN: | 107.75 | 115.33 | 130.61 | 549.22 | 606.95 | 703.92 |

1) Estimated by Montana Hospital Association

SOURCE: Furnished by the Montana Hospital Association; based on data submitted to the American Hospital Association in their annual surveys for 1975, 1976 and 1977.

TABLE B-2
North Central Montana Hospitals

| SOUTHWESTERN | ADJUSTED COST PER PATIENT DAY | | | ADJUSTED COST PER ADMISSION | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| BEAVERHEAD: | | | | | | |
| Barrett Memorial | 72.95 | 83.55 | 112.15 | 306.39 | 396.86 | 527.11 |
| MADISON: | | | | | | |
| Ruby Valley Hospital | 94.12 | 93.55 | 113.42 | 367.07 | 439.69 | 465.02 |
| Madison Valley Hosp. | Not Rept.d | Not Rept.d | Not Rept.d | Not Rept.d | Not Rept.d | Not Rept.d |
| GALLATIN: | | | | | | |
| Bozeman Deaconess | 1) 108.10 | 106.67 | 115.00 | 1) 508.07 | 501.35 | 537.05 |
| LEWIS/CLARK: | | | | | | |
| St.Peters Hospital | 104.71 | 113.75 | 145.96 | 617.79 | 691.80 | 823.27 |
| Shodair Crippled Childrens Hospital | 121.93 | 132.39 | 159.62 | 402.40 | 4[illegible]3.37 | 601.77 |
| BROADWATER: | | | | | | |
| Broadwater Hospital | 58.89 | Not Rept.d | 85.31 | 335.67 | Not Rept.d | 386.45 |
| MEAGHER: | | | | | | |
| Mt. View Memorial | Not Rept.d | 167.71 | 1) 191.05 | Not Rept.d | 855.32 | 1) 974.35 |
| SILVER BOW: | | | | | | |
| St. James Community | 100.46 | 108.47 | 140.76 | 558.56 | 629.13 | 802.33 |
| Silver Bow General | 100.86 | 131.48 | 164.46 | 736.28 | 732.34 | 822.30 |
| DEER LODGE: | | | | | | |
| Community Hospital of Anaconda | 1) 192.00 | 1) 173.70 | 1) 217.54 | 1) 864.00 | 1) 799.02 | 1) 913.69 |
| POWELL: | | | | | | |
| Powell County Mem. Hospital | 81.52 | 92.70 | 105.52 | 415.75 | 451.45 | 506.50 |
| GRANITE: | | | | | | |
| Granite County Memorial Hospital | 115.18 | 120.02 | 135.68 | 483.76 | 624.10 | 554.93 |
| PARK: | | | | | | |
| Livingston Memorial Hospital | 91.76 | 113.28 | 122.91 | 504.68 | 611.71 | 662.49 |
| AVERAGE: | 103.54 | 119.77 | 139.18 | 508.37 | 599.66 | 665.17 |
| MEDIAN: | 100.66 | 113.52 | 135.68 | 494.22 | 617.91 | 601.77 |

1) Estimated by the Montana Hospital Association

SOURCE: Furnished by the Montana Hospital Association; based on data submitted to the American Hospital Association in their annual surveys for 1975, 1976 and 1977

TABLE B-3
Southwestern Montana Hospitals

| SOUTH CENTRAL | ADJUSTED COST PER PATIENT DAY | | | ADJUSTED COST PER ADMISSION | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| FERGUS: | | | | | | |
| Central Montana Hosp. | 82.05 | 116.23 | 137.82 | 566.15 | 697.38 | 785.57 |
| WHEATLAND: | | | | | | |
| Wheatland Memorial | 64.22 | 94.04 | 115.80 | 468.81 | 554.84 | 629.95 |
| MUSSELSHELL: | | | | | | |
| Roundup Memorial | 71.37 | 81.64 | 107.43 | 371.12 | 440.86 | 628.47 |
| SWEETGRASS: | | | | | | |
| Sweetgrass Community | 90.52 | 78.88 | 87.93 | 443.55 | 524.55 | 483.62 |
| STILLWATER: | | | | | | |
| Stillwater Community | 84.51 | 99.76 | 104.69 | 442.83 | 511.77 | 544.39 |
| CARBON: | | | | | | |
| Carbon County Mem. | 55.05 | 66.10 | 83.96 | 330.30 | 350.33 | 462.62 |
| BIG HORN: | | | | | | |
| Big Horn County Hosp. | 113.22 | 96.98 | 110.78 | 407.59 | 431.56 | 428.72 |
| YELLOWSTONE: | | | | | | |
| Billings Deaconess | 97.11 | 111.99 | 136.84 | 640.93 | 772.73 | 998.93 |
| St. Vincents | 93.20 | 104.16 | 125.45 | 521.92 | 578.09 | 664.89 |
| AVERAGE: | 83.47 | 94.42 | 112.34 | 465.91 | 540.23 | 625.24 |
| MEDIAN: | 84.51 | 96.98 | 110.78 | 443.55 | 524.55 | 628.47 |

1) Estimated by Montana Hospital Assocation

SOURCE: Furnished by the Montana Hospital Association; based on data submitted by the American Hospital Association in their annual surveys for 1975, 1976 and 1977

TABLE B-4
South Central Montana Hospitals

| EASTERN | ADJUSTED COST PER PATIENT DAY | | | ADJUSTED COST PER ADMISSION | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | 1974 | 1975 | 1976 |
| VALLEY: | | | | | | |
| Frances Mahon Deaconess Hospital | 90.26 | 94.88 | 114.27 | 464.84 | 521.84 | 6 |
| DANIELS: | | | | | | |
| Daniels Memorial | 90.23 | 115.46 | 134.16 | 505.29 | 565.75 | 7 |
| SHERIDAN: | | | | | | |
| Sheridan Memorial | 51.62 | 74.19 | 66.00 | 371.66 | 467.40 | 397.32 |
| ROOSEVELT: | | | | | | |
| Roosevelt Memorial | 49.83 | 78.42 | 80.08 | 328.88 | 406.21 | 432.43 |
| Trinity Hospital | 80.64 | 97.41 | 106.06 | 427.39 | 526.01 | 5 |
| Poplar Community | 115.76 | 86.57 | 108.76 | 439.89 | 346.28 | 4 |
| McCONE: | | | | | | |
| McCone County Hosp. | 68.62 | 77.55 | 100.00 | 308.79 | 353.63 | 4 |
| GARFIELD: | | | | | | |
| Garfield County Hosp. | 1) 292.41 | 34.70 | 1) 55.73 | 1) 2193.08 | 218.61 | 1) 231.28 |
| RICHLAND: | | | | | | |
| Community Memorial | 83.62 | 87.50 | 95.31 | 418.10 | 463.75 | 505.14 |
| DAWSON: | | | | | | |
| Glendive Community | 98.54 | 105.54 | 131.05 | 571.53 | 550.92 | 6 |
| ROSEBUD: | | | | | | |
| Rosebud Community | 137.37 | 1) 167.86 | 1) 115.21 | 576.95 | 1) 678.15 | 5 |
| CUSTER: | | | | | | |
| Holy Rosary Hospital | 93.20 | 111.86 | 127.46 | 540.56 | 626.41 | 7 |
| PRAIRIE: | | | | | | |
| Prairie Community | 1) 262.85 | 1) 271.25 | 1) 202.29 | 1) 1419.39 | 1) 1464.25 | 1) 1290.61 |
| PHILLIPS: | | | | | | |
| Malta Hospital | 40.42 | 42.60 | 45.30 | 303.15 | 323.76 | 339.75 |
| FALLON: | | | | | | |
| Fallon Memorial | 121.05 | 1) 133.26 | 1) 169.70 | 461.20 | 1) 439.76 | 7 |
| CARTER: | | | | | | |
| Dahl Memorial Hosp. | 64.68 | 73.57 | 87.60 | 349.27 | 426.71 | 4 |
| AVERAGE: | 108.82 | 103.29 | 108.69 | 1) 605.00 | 1) 523.72 | 1) 575.29 |
| MEDIAN: | 90.25 | 91.19 | 107.41 | 450.55 | 465.58 | 517.56 |

1) Estimated by the Montana Hospital Association

SOURCE: Furnished by the Montana Hospital Association; based on data submitted to the American Hospital Association in their annual surveys for 1975, 1976 and 1977

TABLE B-5
Eastern Montana Hospitals

# APPENDIX C

Specialized Services and Facilities

Offered by Montana Hospitals (1975)

SOURCE: American Hospital Association,
Guide to the Health Care Field
1976 Edition

# TABLE C1 Northwestern Montana Hospitals

| NORTHWESTERN | HOSPITAL | Post-Op Recovery | CCU | ICU | Open-heart Surgery | FT Pharmacist | PT Pharmacist | X-Ray Therapy | Cobalt Therapy | Radium Therapy | Diag. Radioisotope | Ther. Radioisotope | Histopathology Lab | Organ Bank | Blood Bank | EEG | Resp. Therapy | Premature Nursery | Self-care Unit | Long-term Care | Inpatient Dialysis | Outpatient Dialysis | Burn Care Unit | PT Dept. | OT Dept. | Inpatient Rehab. | Outpatient Rehab. | Inpatient Psychiatric | Outpatient Psychiatric | Psychiatric-partial hospitalization | Psychiatric Emergency | Pschiatric Home Care | Psychiatric Education | Clinical Psychology | Outpatient Dept. | Emergency Dept. | Social Work | Family Planning | Genetic Counseling | Inpatient Abortion | Outpatient Abortion | Home Care | Dental | Podiatric Services | Speech Pathology | Hospital Auxiliary | Volunteers | Patient Representative | Inpatient Alcoholism | Outpatient Alcoholism | Inpatient Chemical Dependency | Outpatient Chemical Dependency | TB/Respiratory Diseases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lincoln: | St. John's Luth. | | | x | | | x | | | | | | | | x | | | | | | | | | x | | | | | | | | | | | | x | | | | | | | | | x | | | | | | |
| Flathead: | Kalispell Reg. | x | | x | | x | | | | | x | | x | | x | x | x | x | | | x | | | x | | | | x | | | x | x | | | x | x | | | | | | x | | | x | x | | x | | | |
| | North Valley | x | | x | | | x | | | | | | | | x | | x | | | | | | | x | | | | | | | | | | | x | | | | | | | | | x | | | | | | | | |
| Sandera: | Clark Fork Valley | | | x | | | x | | | | | | | | x | | x | | | x | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | |
| Lake: | St. Joseph | x | x | x | | | x | | | | | | | | x | | x | x | | | | | | x | x | | | | | | | | | | | x | | | | | | | | x | x | x | x | | | | | |
| | St. Luke Comm. | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | | |
| | Mission Valley | x | x | | | x | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | | |
| Mineral: | Mineral Co. | (NOT LISTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ravalli: | Marcus Daly Mem. | x | | x | | | x | | | | | | | | x | | x | | | | | | | x | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | | |
| Missoula: | Missoula Comm. | x | | x | | x | | x | | | x | | x | | x | x | x | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | x | | | | | | |
| | Missoula Gen. | | | x | | x | | x | | | | | x | | x | | x | | | | | | | x | | | | | | | | | | | | x | x | | | | | | | | | | x | | | | | | |
| | St. Patrick | x | x | x | x | x | | x | x | x | x | x | x | x | x | x | x | | | | x | | | x | x | | | x | | | x | x | | | x | x | | | | | | | | | x | | x | x | x | | | | | |

# TABLE C2 North Central Montana Hospitals

| NORTH CENTRAL | HOSPITAL | Post-Op Recovery | CCU | ICU | Open-heart Surgery | FT Pharmacist | PT Pharmacist | X-Ray Therapy | Cobalt Therapy | Radium Therapy | Diag. Radioisotope | Ther. Radioisotope | Histopathology Lab | Organ Bank | Blood Bank | EEG | Resp. Therapy | Premature Nursery | Self-care Unit | Long-term Care | Inpatient Dialysis | Outpatient Dialysis | Buro Care Unit | PT Dept. | OT Dept. | Inpatient Rehab. | Outpatient Rehab. | Inpatient Psychiatric | Outpatient Psychiatric | Psychiatric-partial hospitalization | Psychiatric Emergency | Psychiatric Home Care | Psychiatric Education | Clinical Psychology | Outpatient Dept. | Emergency Dept. | Social Work | Family Planning | Genetic Counseling | Inpatient Abortion | Outpatient Abortion | Home Care | Dental | Podiatric Services | Speech Pathology | Hospital Auxiliary | Volunteers | Retiret Representative | Inpatient Alcoholism | Outpatient Alcoholism | Inpatient Chemical Dependency | Outpatient Chemical Dependency | TB/Respiratory Diseases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Glacier: | Glacier Co. Mem. | | | x | | | x | | | | | | | | | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Toole: | Toole Co. | | | x | | | x | | | | x | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pondera: | Pondera Co. | | x | x | | | x | x | | | | | | | | | x | x | | | | | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | | |
| Teton: | Teton Mem. | | | | | | | x | | | x | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | |
| Cascade: | Mt. Deaconess | | x | x | | x | | x | | x | x | x | x | | x | x | x | x | | x | | | | x | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Columbus | | x | x | | x | | x | | x | x | x | x | | x | x | x | x | | x | | x | | x | x | | x | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chouteau: | Chouteau Co. Dst. | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Big Sandy Med. Ct. | (NOT REPORTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hill: | Northern Mt. | | x | x | | x | | | | | x | x | x | | x | x | x | | | | | | | x | | | | x | | | | | | | | | | | | | | | | | | | | | | | | |
| Blaine: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Liberty: | Liberty Co. | | x | x | | x | | | | | | | | | x | | | | | x | | | | x | | | | | | | | | | | | | x | | | | | | | | | | | | | | |

# TABLE C3 Southwestern Montana Hospitals

| SOUTHWESTERN | HOSPITAL | Post-Op Recovery | CCU | ICU | Open-Heart Surgery | FT Pharmacist | PT Pharmacist | X-Ray Therapy | Cobalt Therapy | Radium Therapy | Diag. Radioisotope | Ther. Radioisotope | Histopathology Lab | Organ Bank | Blood Bank | EEG | Resp. Therapy | Premature Nursery | Self-care Unit | Long-term Care | Inpatient Dialysis | Outpatient Dialysis | Burn Care Unit | PT Dept. | OT Dept. | Inpatient Rehab. | Outpatient Rehab. | Inpatient Psychiatric | Outpatient Psychiatric | Psychiatric-partial hospitalization | Psychiatric Emergency | Psychiatric Home Care | Psychiatric Education | Clinical Psychology | Outpatient Dept. | Emergency Dept. | Social Work | Family Planning | Genetic Counseling | Inpatient Abortion | Outpatient Abortion | Home Care | Dental | Podiatric Services | Speech Pathology | Hospital Auxiliary | Volunteers | Patient Representative | Inpatient Alcoholism | Outpatient Alcoholism | Inpatient Chemical Dependency | Outpatient Chemical Dependency | TB/Respiratory Diseases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beaverhead: | Barrett | | | x | | | x | | | | | | | | | x | x | | | | | | | x | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | |
| Madison: | Ruby Valley | | (NOT LISTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Madison Valley | | (NOT REPORTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gallatin: | Bozeman Dea. | x | x | | | x | | x | x | x | | | | | x | x | x | x | | x | | | | x | | | x | | | | | | | | x | | | | | | | | | | | | | | | | | |
| Lewis/Clark: | St. Peter's | x | | x | | x | | x | x | x | | x | x | | x | x | x | x | | | x | | | x | x | | | x | | | | | | x | x | | | | | | | | | | | | | | | | |
| | Shodair | x | | | | | x | | | | | | | | | | x | | | | x | | | x | | | | | | | | | | x | x | | | | | | | | | | | | | | | | |
| Broadwater: | Broadwater | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jefferson: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meagher: | Mountainview | | x | | | | | | | | | | | | x | | x | | | | | | | x | | | | | | | | | x | | | | | | | | | | | | | | | | | | |
| Granite: | Granite Co. | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | |
| Park: | Livingston | x | x | x | | | x | | | | | | | | x | | x | | | | | | | x | | | | | | | | | x | | | | | | | | | | | | | | | | | |
| Silver Bow: | St. James | x | | x | | x | | x | x | x | | x | x | | x | x | x | x | | | | | | x | | | | | | | | | x | | | | | | | | | | | | | | | | | |
| | Silver Bow Gen. | | (NOT REPORTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deer Lodge: | Com./Anaconda | x | | x | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Powell: | Mem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# TABLE C4 South Central Montana Hospitals

| SOUTH CENTRAL | HOSPITAL | Post-Op Recovery | CCU | ICU | Open-heart Surgery | FT Pharmacist | PT Pharmacist | X-Ray Therapy | Cobalt Therapy | Radium Therapy | Diag. Radioisotope | Ther. Radioisotope | Histopathology Lab | Organ Bank | Blood Bank | EEG | Resp. Therapy | Premature Nursery | Self-care Unit | Long-term Care | Inpatient Dialysis | Outpatient Dialysis | Burn Care Unit | PT Dept. | OT Dept. | Inpatient Rehab. | Outpatient Rehab. | Inpatient Psychiatric | Outpatient Psychiatric | Psychiatric-partial hospitalization | Psychiatric Emergency | Psychiatric Home Care | Psychiatric Education | Clinical Psychology | Outpatient Dept. | Emergency Dept. | Social Work | Family Planning | Genetic Counselling | Inpatient Abortion | Outpatient Abortion | Home Care | Dental | Podiatric Services | Speech Pathology | Hospital Auxiliary | Volunteers | Patient Representative | Inpatient Alcoholism | Outpatient Alcoholism | Inpatient Chemical Dependency | Outpatient Chemical Dependency | TB/Respiratory Diseases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fergus: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Petroleum: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Judith Basin: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wheatland: | Wheatland Mem. | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Golden Valley: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Musselshell: | Roundup Mem. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sweetgrass: | Sweetgrass Comm. | (NOT REPORTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stillwater: | Stillwater Comm. | | | x | | | x | | | | | | | | x | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Carbon: | Carbon Co. Mem. | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Big Horn: | Big Horn Co. M. | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yellowstone: | Billings Dia. | x | | x | x | x | | x | x | x | x | x | x | | x | x | x | | | | x | x | | x | | | | x | | | | | | | | x | x | x | | | | | | | | | | | | | | | | | | |
| | St. Vincents | x | | x | | x | | | | x | x | | x | | x | x | x | x | | | | | | x | | | | | | | | | | | | x | x | | | | | | | | | | | | | | | | | | |

# TABLE 05 Eastern Montana Hospitals

| EASTERN | HOSPITAL | Post-Op Recovery | CCU | ICU | Open-heart Surgery | PT Pharmacist | PT Pharmacist | X-Ray Therapy | Cobalt Therapy | Radium Therapy | Diag. Radioisotope | Ther. Radioisotope | Histopathology Lab | Organ Bank | Blood Bank | EEG | Resp. Therapy | Premature Nursery | Self-care Unit | Long-term Care | Inpatient Dialysis | Outpatient Dialysis | Burn Care Unit | PT Dept. | OT Dept. | Inpatient Rehab. | Outpatient Rehab. | Inpatient Psychiatric | Outpatient Psychiatric | Psychiatric-partial hospitalization | Psychiatric Emergency | Psychiatric Home Care | Psychiatric Education | Clinical Psychology | Outpatient Dept. | Emergency Dept. | Social Work | Family Planning | Genetic Counseling | Inpatient Abortion | Outpatient Abortion | Home Care | Dental | Podiatric Services | Speech Pathology | Hospital Auxiliary | Volunteers | Patient Representative | Inpatient Alcoholism | Outpatient Alcoholism | Inpatient Chemical Dependency | Outpatient Chemical Dependency | TB/Respiratory Diseases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valley: | Francea Mahon | | x | x | | x | | | | | | | | | x | | x | | | x | | | | x | x | | | | | | | | | | | | x | | | | | | | | | x | x | | | | |
| Daniels: | Daniels Mem. | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sheridan: | Sheridan Mem. | | x | | | | x | | | | | | | | x | | | x | | x | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | |
| Roosevelt: | Roosevelt Mem. | | | | | | x | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | x | | | | | x | x | | x | | | x | | | | | |
| | Trinity | x | | | | | x | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | x | | | | | |
| | Poplar Comm. | x | | | | | x | | | | | | | | x | x | | | | | | | | | | | | | | | | | | x | | x | | | | | | | | | | | | | | | | |
| McCone: | McCone Co. | (NOT LISTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Garfield: | Garfield Co. | (NOT REPORTED) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Richland: | Community Mem. | x | x | x | | | x | | | | | | x | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | x | | | | | |
| Dawson: | Glendive Comm. | x | | x | | | x | | | | | | | | x | | x | | | | | | | x | | | | | | | | | | | | | x | | | | | | | | | | x | | | | | |
| Wibaux: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosebud: | Rosebud Comm. | | x | | | | x | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | x | | | | | | | | | | x | | | | | |
| Treasure: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Powder River: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Custer: | Holy Rosary | x | x | x | | x | | | | | x | | x | | x | | x | x | | | | | | x | | | | | | | x | | | | x | x | | | | | | | | | | x | x | | | | |
| Prairie: | Prairie Comm. | x | | x | | | | | | | | | | | | | x | | | x | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | |
| Phillips: | Malta | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| [illegible]Fallo[illegible] | [illegible]n Mem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## CRITICAL CARE (INTENSIVE CARE UNIT & CORONARY CARE UNIT) BEDS

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The primary goal of these guidelines is to assure that critical care services are available to Montanans when needed. Because of the vast distance involved, it is felt that availability of ICU/CCU services should take precedence over cost containment considerations. That is, even though maintaining an ICU/CCU capability may not be cost effective, every hospital is obligated to provide this service to the best of its ability.

Because the Health Systems Agency is advocating a policy of maintaining the present compliment of ICU - coronary care beds in small community hospitals, it is suggested that the feasibility of setting up a system of remote monitoring between outlying communities and a referral hospital be explored.

In addition, the following recommendations are suggested:

1) A program of continuing education for the hospital staff members providing this service should be ongoing. Backup staff members must also be trained so that gaps in service are prevented.

2) Each hospital should develop its capability to deliver critical care services according to its community's need. Although most ICU/CCU units cannot be self-supporting, inappropriately large facilities are to be discouraged.

3) Within the next year, a complete inventory of these critical care beds in all hospitals, including state and federal facilities, should be conducted by the state agency. In addition, the state should prepare a draft set of regulations for the licensing of ICU/CCU. This draft should be sent to the HSA Governing Board for their comments.

## CRITICAL CARE (INTENSIVE CARE UNIT & CORONARY CARE UNIT) BEDS

### 1.0 Service Description

Critical care is a generic term used to include both intensive care and coronary care units. These units are specially designated areas of the hospital where selected seriously ill or injured patients receive highly specialized services. In these units, specially trained nursing and support personnel are concentrated with sophisticated electronic monitoring equipment to provide continuous coverage and observation. Thus if the patient has problems and/or complications, corrective measures and life saving techniques can be quickly initiated.

In the larger hospitals, the critical care beds are located in distinct units within the hospital having their own space, staff, and permanently installed equipment. In smaller hospitals, medical/surgical beds which are adjacent to the nursing station are used as needed for ICU/CCU beds. Staff are assigned as the situation dictates and the equipment may be portable.

Some larger hospitals may set up separate intensive care units (ICU's) and coronary care units (CCU's). The primary difference between the two lies in the type of patients they are designed to treat. Coronary care units are maintained specifically to treat patients with definite or suspected acute myocardial infarctions (heart attacks). On the other hand, the intensive care units are designed to treat patients suffering from shock, hemmorrhage, respiratory embarrasment, coma, convulsions, fluid or electrolyte problems, or circulation and complicated drainage problems. ICU's in these larger hospitals are also used to monitor post-surgical patients who have not reacted sufficiently to be safely cared for in a regular medical/surgical bed or who are prone to develop complications requiring close nursing observation and attention. An example of the latter are patients recovering from open heart or brain surgery.

In smaller hospitals, it appears that critical care units are primarily used as an adjunct to the emergency medical system. These units in the larger Montana referral hospitals play an equally important role in post-operative care. However, because of the preponderance of small hospitals in Montana, these guidelines will emphasize the emergency need for these specialized beds.

The purpose of these guidelines is to provide criteria to govern the future expansion of these units in Montana. Because they are hospital based, these units will be examined hospital by hospital.

## 2.0 Background Trends

The development of ICU/CCU units has coincided with advancements and availability of sophisticated electronic monitoring equipment. The development of ICU's preceded the development of CCU's, starting in the early 1960's. The acceptance of these specialized care units was rapidly accepted by the medical profession and their numbers quickly grew. For example, the first CCU was established in 1962 and between 1962 and 1966, 250 hospitals in the United States had established coronary care units.[1)]

In Montana, in recent years, most hospitals have decided to establish these units in one form or another. In 1967, eight hospitals had ICU or CCU beds; [2)] by 1976 this number grew to 47. In addition, most of the hospitals having units in 1967 had increased their critical care bed capacity since that time.

Two developments occurring at the present time in Montana may affect the need for critical care beds in small hospitals within the state. The first is the vertical categorization of hospital capabilities to treat special types of emergency patients. This is currently being investigated by the state EMS Bureau. Vertical Categorization is a method, whereby, selected emergency patients (e.g. persons with burns, head and spinal cord injuries or who have been poisoned) would be initially treated for resusitation and stabilization and then transferred to other appropriate facilities, if deemed necessary by the attending physician. In general, the impact of this development will probably be small. Most small hospitals designed their critical care units with heart attack and accident victims in mind and these are the most frequent emergencies encountered by EMS.

The second development being considered is the licensure of critical care beds. Up to this time, these beds have not been separately licensed by the state. If adopted, this licensing procedure might reduce the future growth of these units, but to what extent is not known.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Because of the intensity of care delivered in these specialized units, the costs are considerably higher than a regular medical/surgical bed. For this reason, the appropriateness of this care should be monitored periodically.

Although not a primary consideration, critical care (ICU and CCU) units should be self-supporting. This is especially true for larger continually maintained units. A study of 32 coronary care units in New England indicated that 38 percent (12 units) made a surplus (i.e. they generated more revenue than expenses). With one exception, all of these maintained four or more beds. [3)]

Although economies of scale can be realized by consolidating these units in one hospital, it is felt that all hospitals have a responsibility to treat and care for cardiac and other seriously ill patients which are to be found in these units. For this reason, duplication of these units in some communities may be justified.

### 3.2 Accessibility and Availability

Not all hospitals need to set up critical care units. Those that don't, however, should be able to stabilize injured patients and to provide emergency resuscitation services in their emergency rooms as needed. They should also have standing procedures for the transfer of these patients to nearby facilities with a critical care capability.

Hospitals having a critical care capability should be strategically located so that patients with coronary symptoms and other appropriate conditions can be treated as quickly as possible. If these beds are to be maintained, they should be available on a 24-hour basis and staffed continuously when occupied.

Written procedures should be developed outlining the criteria for admission and discharge. The admissions criteria should be sufficiently flexible to allow the physician's discretion, but sufficiently rigid to prevent abuse. One authority recommends that proven myocardial infarctions should account for 40-70 percent of the total CCU admissions, with the lower figure preferred [4].

### 3.3 Continuity

Because many of the ICU/CCU patients will be seen first in the emergency room, the unit should be readily accessible to the emergency room. In small hospitals where monitored beds are used instead of a distinct unit, it is more important, however, to have these patients next to the nurses station.

Provisions should be made for step-down care after it has been decided that continuous monitoring of the patient is no longer necessary. It has been suggested, for example, that after their condition has stabilized, heart attack victims might be transferred to a progressive care area where EKG monitoring (telemetry) can be continued but the level of visual surveillance and attendance is reduced. In the absence of such a monitoring capability, the patient should be admitted to a general medical floor.

### 3.4 Quality

In hospitals where ICU/CCU units have been established, a medical director or committee of the medical staff of the unit should be appointed. His (their) duties should include medical supervision and educational responsibilities as well as patient treatment responsibility in emergencies. When the unit is filled to capacity and a critically ill patient is admitted, it should be his responsibility to determine the allocation of beds in consultation with the other attending physicians.

A physician knowledgable in emergency procedures should be available for in-house consultation. Provisions should also be made for specialty consultation. In the case of coronary care patients, arrangements should have been established for the direct transmission of electrocardiograms (EKG's) to consultants in distant facilities if no local cardiologists are available.

Continuous, around the clock nursing coverage should be provided to patients in these units. A sufficiently high ratio of nurses to patients shall be maintained to adequately meet the nursing care needs of patients in the units. In general, adequate care will require a minimum of not less than (1) registered professional nurse for every three patients. The need may be as high as one (1) nurse for each patient. Specially oriented licensed practical nurses, working under close professional nurse supervision to perform assigned bedside duties may be used to reduce this ratio. 5)

Registered professional nurses assigned to the intensive care unit should have received special instruction and orientation as well as supervised experience in treatment methods, procedures, monitoring and observation techniques to enable them to function competently. All nurses staffing these units should periodically take continuing education and refresher courses to maintain their proficiency. Larger hospitals may choose to offer inservice instruction programs to their staffs.

There should be regular inspection of all equipment in intensive care units in accord with an established schedule to prevent equipment failure when being used. Because of the large amount of equipment needed to support these, more space is required than for a general medical bed. Authorities are recommending each patient bed area contain at least 132 square feet of floor space for critical care beds. 6,7)

## 4.0 Description of the Present Situation

### Inventory and Utilization Levels

The hospitals in Montana with intensive care units, coronary care units or combined critical care beds are shown in Table 1 through 5. Forty-seven (47) of Montana's sixty one (61) community hospitals are currently maintaining this capability. In these hospitals, between five (5) and fifteen (15) percent of the beds are allocated to these services.

It should be emphasized that although the hospitals have reported ICU or CCU beds, many are used for both purposes. It appears, however, that most were initially set up to care for cardiac and emergency patients. It should be further emphasized that many of the smaller hospitals use these beds as "swing" beds using them for medical/surgical patients as needed.

| HOSPITAL | NUMBER OF BEDS (1976) | 1976 OCCUPANCY (%) | 1976 AVERAGE LENGTH OF STAY |
|---|---|---|---|
| St. John's Lutheran Hosp. (Libby) | 2 | 22.7 | 2.5 |
| Kalispell Regional Hosp. (Kalispell)* | 7 | 68.3 | N/A |
| North Valley Hosp. (Whitefish) | 4 | 38.2 | 3.3 |
| Clark Fork Valley Hosp. (Plains) | 2 | 32.3 | 2.4 |
| St. Joseph Hosp. (Polson) | 2 | 48.6 | N/A |
| St. Luke Hosp. (Ronan) | 0 | --- | --- |
| Mission Valley Hosp. (St. Ignatius) | 2 | 14.1 | 3.2 |
| Mineral Co. Hosp. (Superior) | 2 | 14.7 | 3.3 |
| Missoula Community Hosp. (Missoula)* | 4 | 51.0 1) | 3.2 1) |
| Missoula General Hosp. (Missoula) * | 5 2) | 15.2 | 3.3 |
| St. Patrick Hosp. (Missoula)* | 13 3) | 56.5 | 5.2 |
| Marcus Daly Mem. Hosp. (Hamilton) | 2 | 48.8 | 2.3 |
| TOTAL | 45 | | |
| AVERAGE | | 44.2 | 3.7 |
| - 50 or more beds* | | 51.5 | 4.9 |
| - less than 50 beds | | 34.1 | 2.7 |

1) 1975 statistics; 1976 statistics not reported
2) 3 ICU and 2 CCU beds
3) 9 ICU and 4 CCU beds

SOURCE: Based upon unpublished data reported in the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

TABLE 1 - Number of ICU and CCU Beds in Northwestern Montana Hospitals and Related Statistics

| HOSPITAL | NUMBER OF BEDS (1976) | 1976 OCCUPANCY (%) | 1976 AVERAGE LENGTH OF STAY |
|---|---|---|---|
| Glacier Co. Mem. Hosp. (Cut Bank) | 2 | 12.2 | 5.9 |
| Toole Co. Hosp. (Shelby) | 2 | 15.5 | 2.5 |
| Pondera Co. Hosp. (Conrad) * | 2 | 29.1 | N/A |
| Teton Mem. Hosp. (Choteau) | 0 | --- | --- |
| Columbus Hospital (Great Falls) * | 14[1)] | 56.3 | 8.9 |
| Mt. Dea. Medical Center (Great Falls) * | 17[2)] | 55.4 | 7.8 |
| Choteau Co. Hosp. (Ft. Benton) | 0 | --- | --- |
| Big Sandy Medical Ctr. (Big Sandy) | 0 | --- | --- |
| Northern Mt. Hosp. (Havre) * | 7 | 49.1 | 4.3 |
| Liberty Co. Hosp. (Chester) | 0 | --- | --- |
| TOTAL | 44 | | |
| AVERAGE | | 52.3 | 7.6 |
| - 50 or more beds * | | 54.7 | 7.7 |
| - less than 50 beds | | 13.8 | 3.4 |

1) 8 ICU and 6 CCU beds
2) 12 ICU and 5 CCU beds - MDMC has the capability for seven monitored CCU beds and 22 step-down CCU beds. Two rooms have capability for two sets of monitoring equipment (capability for two patients), however, due to professional preference, only one set of monitoring equipment is installed in each (i.e. one patient per room). Therefore, MDMC utilizes five monitored CCU beds.

SOURCE: Based upon unpublished data reported in the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

TABLE 2 - Number of ICU and CCU Beds in North Central Montana Hospitals and Related Statistics

| HOSPITAL | NUMBER OF BEDS (1976) | 1976 OCCUPANCY (%) | 1976 AVERAGE LENGTH OF STAY |
|---|---|---|---|
| Barrett Hospital (Dillon) | 2 | 9.2 | 2.2 |
| Ruby Valley Hosp. (Sheridan) | 2 | 3.2 | 1.6 |
| Madison Valley Hosp. (Ennis) | 1 | 17.5 | 2.5 |
| Bozeman Deaconess Hosp. (Bozeman) * | 4 | N/A | N/A |
| St. Peter's Hosp. (Helena) * | 9 | 51.6 | 2.9 |
| Shodair Crippled Childrens Hosp. (Helena) | 0 | --- | --- |
| Broadwater Hosp. (Townsend) | 1 | 12.3 | 5.0 |
| Mt. View Mem. Hosp. (White Sulphur Springs) | 0 | --- | --- |
| Granite Co. Mem. Hosp. (Philipsburg) | 1 | N/A | N/A |
| Powell Co. Mem. Hosp. (Deer Lodge) | 2 | 33.7 | 3.1 |
| St. James Comm. Hosp. (Butte) * | 4 1) | 73.6 | 4.2 |
| Silver Bow General Hosp. (Butte) * | 2 | 32.6 | N/A |
| Comm. Hosp. of Anaconda (Anaconda)* | 2 | 29.9 | N/A |
| Livingston Mem. Hosp. (Livingston)* | 4 | 26.6 | 5.2 |
| TOTAL | 34 | --- | --- |
| AVERAGE | | 38.3 | 3.3 |
| - 50 or more beds * | | 47.2 | 3.4 |
| - less than 50 beds | | 15.2 | 2.8 |

1) Plans for the new facility calls for 12 critical beds

SOURCE: Based upon unpublished data reported in the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

TABLE 3 - Number of ICU and CCU Beds in Southwestern Montana Hospitals and Related Statistics

| HOSPITAL | NUMBER OF BEDS (1976) | 1976 OCCUPANCY (%) | 1976 AVERAGE LENGTH OF STAY |
|---|---|---|---|
| Central Mt. Hosp. (Lewistown)* | 5[1)] | 25.3 | 5.9 |
| Wheatland Mem. Hosp. (Harlowtown) | 0 | | |
| Roundup Memorial Hospital (Roundup) | 0 | | |
| Stillwater Comm. Hosp. (Columbus) | 2 | N/A | N/A |
| Sweetgrass Comm. Hosp. (Big Timber) | 1 | 1.6 | 3.0 |
| Carbon Co. Mem. Hosp. (Red Lodge) | 2 | 27.8 | 3.7 |
| Big Horn Co. Mem. Hosp. (Hardin) | 0 | | |
| Billings Deaconess Hosp. (Billings)* | 15[2)] | 65.5 | 6.9 |
| St. Vincents Hosp. (Billings)* | 24[3)] | 76.9[4)] | N/A |
| TOTAL | 49 | ---- | --- |
| AVERAGE | | 59.9 | 6.5 |
| - 50 or more beds * | | 63.5 | 6.7 |
| - Less than 50 beds | | 19.1 | 3.7 |

1) 2 ICU & 3 CCU beds
2) 9 ICU & 6 CCU beds
3) St. Vincents Hospital had 7 ICU & 5 CCU beds in 1976, new facility which opened in 1977 has 24 beds
4) Based on the 12 beds in service in 1976

SOURCE: Based upon unpublished data reported in the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

TABLE 4 - Number of ICU and CCU Beds in South Central Hospitals and Related Statistics.

| HOSPITALS | NUMBER OF BEDS (1976) | 1976 OCCUPANCY (%) | 1976 AVERAGE LENGTH OF STAY |
|---|---|---|---|
| Malta Hospital (Malta) | 1 | 46.0 | 3.5 |
| Frances Mahon Deaconess Hosp. (Glasgow)* | 6[1)] | 43.8 | 3.2 |
| Daniels Mem. Hosp. (Scobey) | 0 | | |
| Sheridan Mem. Hosp. (Plentywood) | 1 | 19.4 | 3.6 |
| Roosevelt Mem. Hosp. (Culbertson) | 0 | | |
| Trinity Hosp. (Wolf Point) | 0 | | |
| Poplar Comm. Hosp. (Poplar) | 0 | | |
| Garfield Co. Hosp. (Jordan) | 1 | 5.5 | 5.0 |
| McCone Co. Hosp. (Circle) | 0 | | |
| Community Mem. Hosp. (Sidney)* | 4[2)] | 27.2 | 2.8 |
| Glendive Comm. Hosp. (Glendive) | 3[3)] | 21.6 | 2.9 |
| Rosebud Comm. Hosp. (Forsyth) | 2 | 17.1 | 5.0 |
| Fallon Mem. Hosp. (Baker) | 3[3)] | 4.2 | 1.9 |
| Dahl Mem. Hosp. (Ekalaka) | 0 | | |
| Holy Rosary Hosp. (Miles City)* | 7[4)] | 23.4 | N/A |
| Prairie Comm. Hosp. (Terry) | 1 | 2.2 | N/A |
| TOTAL | 29 | ---- | --- |
| AVERACE<br>- 50 or more beds *<br>- Less than 50 beds | | <br>24.8<br>15.1 | <br>N/A<br>2.4 |

1) 4 ICU & 2 CCU Beds
2) 2 ICU & 2 CCU Beds
3) 1 ICU & 2 CCU Beds
4) 4 ICU & 3 CCU Beds

SOURCE: Based upon unpublished data reported in the 1976 Hospital & Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana

TABLE 5 - Number of ICU and CCU Beds in Eastern Montana Hospitals and Related Statistics.

Because these beds are often used interchangably, the utilization statistics in Tables 1 through 5 reflect usage of both units together. An examination of the larger hospitals where the units are distinct indicates that the difference between occupancy and length of stay, respectively, in the two units are not appreciable.

The average annual occupancy of these units is about 45 percent. Like other areas of the country, the larger hospitals are able to maintain higher occupancy rates than the smaller ones. For example, hospitals licensed for 50 or more beds had an average occupancy of 52.3 percent in 1975 and 52.1 percent in 1976. In comparison, hospitals with fewer than 50 beds averaged occupancy rates of 15.4 and 23.9 percent respectively. Except for Eastern Montana, the rates did not vary significantly among the subareas. The large hospitals in Eastern Montana had occupancy rates considerable below the larger hospitals in the other subareas.

The average length of stay in these units in Montana appears to be considerably below that predicted nationally. Planning documents for these units suggest that the average length of stay in these units should be 5 to 7 days. In contrast, ICU and CCU units in Montana had an average length of stay of 4.2 days in 1975 and 5.1 days in 1976. The smaller hospitals, on the average, had shorter lengths of stay. However, this is not consistant from hospital to hospital. Hospitals under 50 beds have an average length of stay of 3.1 days in 1975 and 2.7 days in 1976. In comparison, the ones with over 50 beds had corresponding statistics of 4.3 and 6.1.

## 4.2 Problems

Three interrelated problems are encountered in delivering critical care services in Montana. They are geography and distance, financing, and utilization. The vast distances between hospitals in Montana demand that the small hospitals be capable of treating critically ill patients. In doing so they are likely to provide this service at a loss and must be subsidized by the other hospital services and county taxes. Finally, even if the service is provided and financing available, the low utilization rates are detrimental to staff proficiency. Most hospitals have to implement staff flotation policies to provide sufficient ICU/CCU coverage, and, at the same time, minimize personnel costs. To maintain their skills, nurses must take a number of continuing education programs and yet the small hospital does not have flexibility to grant extensive staff time for such programs.

An additional problem involves the reported length of stay of patients in the critical care units. It appears to be substantially less in several Montana hospitals than the national statistics. The reasons for those differences cannot be explained at this time.

## 5.0 Estimate of Service Requirements

The estimated number of ICU/CCU beds needed in 1985 in each of the Montana hospitals currently maintaining this capability are shown in Tables 6 through 10.

The model used to make these estimates is based upon the following equation:

$$\text{Bed Need} = \text{ADC} + 2.33 \sqrt{\text{ADC}}$$

where ADC is the expected average daily census in the unit.

The first factor, ADC, represents the average daily patient load in the unit. The second factor, $2.33 \sqrt{\text{ADC}}$, is used to account for day to day fluctuations and to assure sufficient surplus to assure reasonable accessibility. The multiplier 2.33 is used to estimate that the probability that an empty bed will be available 99% of the time. That is, the number of beds provided should be sufficient for patient needs 361 days out of any given year; more patients than available beds can be expected approximately 4 days out of the year.

In making projections for 1985, the average daily census for 1976 was adjusted to take into account future population growth.

Two problems, however, are encountered in using this model and the estimates derived from it. First, the need for these beds in hospitals not already having this capability in one form or another is not taken into account.

The second problem is that in the larger hospitals some services, in themselves, will create a demand for more ICU/CCU beds. This is especially true for those institutions performing open heart surgery and neurosurgery. If an open heart surgery team is operating at optimal levels (200 operations a year), it alone will require two CCU beds for its patients. It is assumed that a neurosurgery team will require a similar number of beds. Thus, if a hospital proposes to deliver either of these two services, then it should consider the effect on its ICU/CCU unit(s).

Returning to tables 6 through 10, it appears that most hospitals have built critical care beds commensurate with community need and will not need to expand their capabilities in this area in the next five years. By 1985, most of the areas served will have a surplus or deficit of one or two beds if current utilization rates persist.

The tables indicate that four hospitals, Kalispell Regional, St. Patrick in Missoula, Billings Deaconess and Bozeman Deaconess, might investigate expanding their ICU/CCU capability in the near future. All appear to need at least three additional critical care beds by 1983, although the data from Bozeman Deaconess is based on overall hospital utilization rather than specific ICU/CCU statistics.

| HOSPITAL | AVERAGE DAILY CENSUS (1976) | AVERAGE DAILY CENSUS 1985 [1] | BEDS NEEDED 1985 | BEDS CURRENTLY AVAILABLE | DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| St. John's Lutheran Hosp. (Libby) | 0.45 | 0.45 | 2 | 2 | 0 |
| Kalispell Reg. Hosp. (Kalispell) | 4.78 | 5.93 | 12 | 7 | 5 |
| North Valley Hosp. (Whitefish) | 1.53 | 1.90 | 5 | 4 | 1 |
| Clark Fork Valley Hosp. (Plains) | 0.65 | 0.78 | 3 | 2 | 1 |
| St. Joseph Hosp. (Polson) | 0.97 | 1.11 | 4 | 2 | 2 |
| St. Luke Hosp. (Ronan) | | | 0 | 0 | 0 |
| Mission Valley Hosp. (St. Ignatius) | 0.28 | 0.32 | 2 | 2 | 0 |
| Mineral Co. Hosp. (Superior) | 0.29 | 0.36 | 2 | 2 | 0 |
| Missoula Comm. Hosp. (Missoula) | 2.04 [2] | 2.43 | 6 | 4 | 2 |
| Missoula Gen. Hosp. (Missoula) | 0.76 | .90 | 3 | 5 | (2) |
| St. Patrick Hosp. (Missoula) | 7.35 | 8.75 | 16 | 13 | 3 |
| Marcus Daly Mem. Hosp. (Hamilton) | 0.98 | 1.12 | 4 | 2 | 2 |
| TOTAL | | | 59 | 45 | 14 |

1) Adjusted for expected population change
2) Based on 1975 statistics; 1976 data not available

| | 1976 | 1985 No Additional Beds | 1985 Estimated Need |
|---|---|---|---|
| Critical care Bed to 1,000 population ratios | 0.26 | 0.22 | 0.29 |

TABLE 6 - Comparison between the estimated number of ICU/CCU beds needed in Northwestern Montana hospitals in 1985 and number currently available.

| HOSPITAL | AVERAGE DAILY CENSUS (1976) | AVERAGE DAILY CENSUS (1985) 1) | BEDS NEEDED 1985 | BEDS CURRENTLY AVAILABLE | DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Glacier Co. Mem. Hosp. (Cut Bank) | 0.24 | 0.26 | 2 | 2 | 0 |
| Toole Co. Hosp. (Shelby) | 0.31 | 0.30 | 2 | 2 | 0 |
| Pondera Co. Hosp. (Conrad) | 0.58 | 0.62 | 2 | 2 | 0 |
| Teton Mem. Hosp. (Choteau) | | 0 | 0 | 0 | 0 |
| Columbus Hosp. (Great Falls) | 7.88 | 8.35 | 15 | 14 | 1 |
| Mt. Dea. Medical Ctr. (Gr. Falls) | 9.42 | 9.99 | 17 | 17 | 0 |
| Chouteau Co. Hospital (Ft. Benton) | | | | | |
| Big Sandy Medical Ctr. (Big Sandy) | | | | | |
| Northern Mt. Hosp. (Havre) | 3.45 | 3.61 | 8 | 7 | 1 |
| Liberty Co. Hosp. (Chester) | | | | | |
| TOTAL | | | 46 | 44 | 2 |

1) Adjusted for expected population change

| | 1976 | 1985 No Additional Beds | 1985 Estimated Need |
|---|---|---|---|
| Critical care Bed to 1,000 population ratio | 0.30 | 0.29 | 0.30 |

TABLE 7 - Comparison between the estimated number of ICU/CCU beds needed in North Central Montana hospitals in 1985 and the number currently available.

| HOSPITAL | AVERAGE DAILY CENSUS (1976) | AVERAGE DAILY CENSUS (1985) 1) | BEDS NEEDED 1985 | BEDS CURRENTLY AVAILABLE | DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Barrett Hospital (Dillon) | 0.18 | 0.20 | 2 | 2 | 0 |
| Ruby Valley Hosp. (Sheridan) | 0.06 | 0.06 | 1 | 2 | (1) |
| Madison Valley Hosp. (Ennis) | 0.18 | 0.19 | 1 | 1 | 0 |
| Bozeman Deaconess Hosp. (Bozeman) | 2.50 2) | 2.95 | 7 | 4 | 3 |
| St. Peter's Hosp. (Helena) | 4.64 | 5.71 | 11 | 9 | 2 |
| Shodair Crippled Childrens Hosp. (Helena) | 0 | 0 | 0 | | |
| Broadwater Hosp. (Townsend) | 0.12 | 0.13 | 1 | 1 | 0 |
| Mt. View Mem. Hosp. (White Sulphur) | 0.07 3) | 0.07 | 1 | 1 | 0 |
| Granite Co. Mem. Hosp. (Philipsburg) | 0.22 2) | 0.23 | 1 | 1 | 0 |
| Powell Co. Mem. Hosp. (Deer Lodge) | 0.67 | 0.80 | 3 | 2 | 1 |
| St. James Comm. Hosp. (Butte) | 2.94 | 3.18 | 7 | 12 4) | (5) |
| Silver Bow Gen. Hosp. (Butte) | 0.65 | 0.70 | 3 | 2 | 1 |
| Comm. Hosp. of Anaconda (Anaconda) | 0.60 | 0.64 | 2 | 2 | 0 |
| Livingston Mem. Hosp. (Livingston) | 1.06 | 1.22 | 4 | 4 | 0 |
| TOTAL | | | 44 | 43 | 1 |

1) Adjusted for expected population change
2) Data for ICU/CCU beds not available; It is assumed that the occupancy rate of these units were the same as the hospital overall.
3) Based on 1975 statistics; 1976 data is not available
4) 4 beds currently available; approved plan for new hospital calls for 12 bed unit.

| | 1976 | 1985 No Additional Beds | 1985 Estimated Need |
|---|---|---|---|
| Critical care Bed to 1,000 population ratio | 0.24 | 0.21 | 0.21 |

TABLE 8 - Comparison between the estimated number of ICU/CCU beds needed in Southwestern Montana hospitals in 1985 and the number currently available

| HOSPITAL | AVERAGE DAILY CENSUS (1976) | AVERAGE DAILY CENSUS (1985) [1] | BEDS NEEDED 1985 | BEDS CURRENTLY AVAILABLE | DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Central Mt. Hosp. (Lewistown) | 1.27 | 1.32 | 4 | 5 | (1) |
| Wheatland Mem. Hosp. (Harlowtown) | | | | | |
| Roundup Mem. Hosp. (Roundup) | | | | | |
| Stillwater Comm. Hosp. (Columbus) | 0.27[2] | 0.32 | 2 | 2 | 0 |
| Sweetgrass Comm. Hosp. (Big Timber) | 0.02 | 0.02 | 1 | 1 | 0 |
| Carbon Co. Mem. Hosp. (Red Lodge) | .56 | 0.60 | 2 | 2 | 0 |
| Big Horn Co. Mem. Hosp. (Hardin) | | | | | |
| Billings Deaconess Hosp. (Billings) | 9.83 | 12.48 | 21 | 15 | 6 |
| St. Vincent's Hosp. (Billings) | 11.08[3] | 14.07 | 23 | 24 | (1) |
| TOTAL | | | 53 | 49 | 4 |

1) Adjusted for expected population change
2) Based upon 1975 statistics; data for 1976 is not available..
3) Opened late February, 1976.

| | 1976 | 1985 No Additional Beds | 1985 Estimated Need |
|---|---|---|---|
| Critical care Bed to 1,000 population ratio | 0.32 | 0.28 | 0.30 |

TABLE 9 - Comparison between the estimated number of ICU/CCU beds needed in South Central Montana hospitals in 1985 and the number currently available.

| HOSPITAL | AVERAGE DAILY CENSUS (1976) | AVERAGE DAILY CENSUS (1985) 1) | BEDS NEEDED 1985 | BEDS CURRENTLY AVAILABLE | DEFICIT (SURPLUS) |
|---|---|---|---|---|---|
| Malta Hospital (Malta) | 0.46 | 0.48 | 2 | 1 | 1 |
| Frances Mahon Dea. Hosp. (Glasgow) | 2.63 | 3.20 | 7 | 6 | 1 |
| Daniels Mem. Hosp. (Scobey) | | | | | |
| Sheridan Mem. Hosp. (Plentywood) | 0.19 | 0.18 | 1 | 1 | 0 |
| Roosevelt Mem. Hosp. (Culbertson) | | | | | |
| Trinity Hosp. (Wolf Point) | | | | | |
| Poplar Comm. Hosp. (Poplar) | | | | | |
| Garfield Co. Hosp. (Jordan) | 0.05 | 0.05 | 1 | 1 | 0 |
| McCone Co. Hosp. (Circle) | | | | | |
| Community Mem. Hosp. (Sidney) | 1.09 | 1.27 | 4 | 4 | 0 |
| Glendive Comm. Hosp. (Glendive) | 0.65 | 0.75 | 3 | 3 | 0 |
| Rosebud Comm. Hosp. (Forsyth) | 0.17 | 0.19 | 1 | 2 | (1) |
| Fallon Mem. Hosp. (Baker) | 0.13 | 0.14 | 1 | 3 | (2) |
| Dahl Mem. Hosp. (Ekalaka) | | | | | |
| Holy Rosary Hosp. (Miles City) | 1.64 | 1.79 | 5 | 7 | (2) |
| Prairie Comm. Hosp. (Terry) | 0.02 | 0.02 | 1 | 1 | 0 |
| TOTAL | | | 26 | 29 | (3) |

1) Adjusted for expected population change

| | 1976 | 1985 No Additional Beds | 1985 Estimated Need |
|---|---|---|---|
| Critical care Bed to 1,000 population ratio | 0.29 | 0.27 | 0.24 |

TABLE 10 - Comparison between the number of ICU/CCU beds needed in Eastern Montana hospitals in 1985 and the number currently available

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3. Bloom, B. S. and O. L. Peterson, "End Results Cost & Productivity of Coronary Care Units" New England Journal of Medicine, Volume 288, No. 2, January 11, 1973, p. 27-28.

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## GENERAL HOSPITAL PSYCHIATRIC UNITS

### GOALS, OBJECTIVES AND RECOMMENDATIONS

The current availability of psychiatric units seems adequate. Bozeman, Helena, and Havre should make plans for the development of inpatient psychiatric care treatment programs with the support of the community treatment program and psychiatrists.

It is essential that psychiatrists and psychiatric nurses be available to staff the units. Thus, psychiatrists must be recruited to practice in Montana.

All health care providers will need access to continuing education in order to appropriately assume responsibility for the acutely psychiatrically ill person finding him/herself in an inpatient psychiatric unit; this would include psychiatrists, nurses and ancillary personnel.[10]

Interprofessional communications must be maintained for the comprehensive care of the sick, for recent epidemiological studies indicate that there is a positive association between physical and psychiatric disorders. In medical settings such occurrence may be expected in 20 - 50% of patients.[11]

The legislature should be asked to investigate the possibility of requiring third-party payors in Montana to include acute psychiatric hospitalization coverage.

# GENERAL HOSPITAL PSYCHIATRIC UNITS

## 1.0 Service Description

### 1.1 Definition

General acute care hospital psychiatric services are but a portion of the total mental health service network. Typically, acutely ill patients are admitted to general hospital psychiatric units for brief stays rarely exceeding ten or eleven days. Psychiatric beds can be defined as hospital beds, the occupants of which are there primarily to receive services from and under the direction of a physician specializing in psychiatry.[1] Patients in half-way houses, group homes, and nursing homes may also be seen in consultation by psychiatrists, however, the primary reason for patients being housed in these facilities is not to see psychiatrists.[2]

### 1.2 Geographic Boundaries

The entire state of Montana is the service area.

## 2.0 Background Trends

The mental health delivery system in the United States has undergone rapid and major revision in recent years. The trend has been toward the provision of services to patients in their own home communities. Underlying this trend is the principle that removing a person from "normal home and communities makes resolution of problems more difficult than maintenance of the ill person in the home and community."[3]

The utilization of local services has been steadily increasing as state and psychiatric hospitals have decreased in size, or, in some areas, closed completely. Since 1963, with the passage of the Community Mental Health Centers Act of 1963, the resident populations of these hospitals have decreased nationwide by 45%.[4]

### 2.1 Incidence, Prevalence

Anyone, at some point in time, may be in need of some form of psychiatric care. Psychiatric conditions are those which include both mental and emotional disabilities. Using the definition provided by Warm Springs State Hospital, mental illness is generally described as: inappropriate, irrational or unrealistic behavior. Any condition of emotional maladjustment which renders a person unable to function in the life situation (the living unit, the work or school unit, the formal social system and/or informal social relations), causing stress to oneself or to the lives of those around one and which severely affects a person's behavior or ability to rationally think, may classify this person as mentally ill. Physical, psychological and/or environmental factors may be the cause.

The majority of patients admitted to psychiatric units in Montana appear to be:[5]

- Very depressed/often suicidal
- Acutely psychotic
- Have some form of severe organic brain syndrome

## 2.2 Service Trends

Short-term hospitalization in the patient's general hospital is rapidly replacing long-term hospitalization in State Mental Institutions. Outpatient and crisis care has helped to decrease the number of admissions to the larger institutions. Currently, three levels of care exist, namely:

- Outpatient and crisis care (private practitioners, mental health centers);
- Short-term hospitalization (general hospital psychiatric units); and,
- Long-term hospitalization (State Hospitals - for many individuals with organic damage, chronic disabling functional disease, and inadequately developed personality functioning).

In many cases, outpatient services are favored over inpatient. St. Patrick's Hospital in Missoula is the only hospital which differentiated out-and-inpatient psychiatric service visits. Namely, there were 232 outpatient visits in Missoula in 1975 and 240 in 1976. Good discharge planning is essential to the provision of these services.

# 3.0 Service Guidelines

## 3.1 Costs

The cost of services in the psychiatric unit of the hospital should be reimbursable by all third-party payors.

The average daily service charge for hospital psychiatric units is $84.00 for semi-private rooms. A private room may run as high as $95.00 a day and as high as $135.00 daily for one to one care.

All third-party payors should be encouraged to reimburse for initial psychiatric diagnosis.

## 3.2 Availability

If special psychiatric service beds are not available, general acute care beds should be available for the care of psychiatric patients.

3.3 Accessibility

The care for psychiatric patients should be readily accessible in all regions of the state of Montana.

General acute care hospitals shall be accessible to all individuals as defined in the General Acute Care Hospital Bed Component.

3.4 Continuity

Patients referred to the psychiatric services of the general hospital should be under the care of a psychiatrist. When psychiatrists are not available, other physicians with special interest and knowledge in the area of mental/emotional illness should be identified as accepting the primary responsibility for the care of these patients.

Psychiatric unit staff should aid in the diagnosis and management of mental/emotional disorders among medical and surgical patients.

3.5 Acceptability

The type and kind of care provided shall be acceptable to the psychiatrists, physicians, and psychiatric nurses, as well as meeting the standards set forth in the Standards for Psychiatric Facilities,[6] published by the American Psychiatric Association.

3.6 Quality

All psychiatric unit services should adhere to the Standards for Psychiatric Facilities. All units should have at least one psychiatrist on staff.

4.0 Description of the Present Situation

There are presently four hospitals in Montana that have actual psychiatric units, are staffed by professional personnel, and utilize therapeutic treatment modalities. These are Billings Deaconess Hospital, Montana Deaconess Hospital in Great Falls, St. Patrick's Hospital in Missoula, and Silver Bow General Hospital in Butte. Kalispell Regional Hospital has three beds designed for psychiatric care, and Holy Rosary Hospital in Miles City has two. Other hospitals in the state have security rooms for psychiatric patients or will use a general bed or room for such patients.

The provision of psychiatric services is often quite costly to the hospital due to the fact that mental health care insurance is not often comprehensive, due to the fact that a large percentage of mental patients are not covered by third-party payors. Montana Deaconess reports that "psychiatric coverage

TABLE 1

PSYCHIATRIC BED ADMISSION DATA FOR 1976

| Name of Hospital | # Beds | Total Admissions | Total Inpatient Days | Average Length of Stay (Days) | Occupancy Rate % | Transfer to Warm Springs |
|---|---|---|---|---|---|---|
| Montana Deaconess Medical Center, Great Falls | 28 | 874 | 6381 | 7.4 | 58.3% | 15 |
| St. Patrick Hospital, Missoula | 17 | 655 | 3623 | 9.2 | 54.6% | -- |
| Billings Deaconess, Billings | 21 | 510 | 5149 | 10.1 | 67.0% | 19 |
| Silver Bow General, Butte | 18 | NEW FACILITY | | | | |
| Kalispell Regional Hospital, Kalispell | 3 | 19 | 74 | 3.9 | 6.8% | -- |
| Holy Rosary Hospital, Miles City | 5 | 105 | 546 | 5.2 | 29.9% | 25 |

is usually not as good as medical/surgical."[7] All four of the reporting hospitals state that they charge off as charity and/or bad debts a percentage of unpaid psychiatric services.

The number of beds, total admissions, length of stay, and occupancy rates of the four hospitals with psychiatric units and Kalispell Regional Hospital are indicated in Table 1. In Montana the average length of stay for psychiatric unit patients is 9.7 days as compared to the national average of 11 days.[8]

The number of psychiatrists currently practicing in the state of Montana is shown in Table 2.

## 4.1 Problems

While most insurers are now providing short-term, inpatient psychiatric coverage, many patients have no insurance at all. Decisions about treatment and hospital stay have to be made without knowledge of whether the patient will be accepted for insurance to cover the hospital bill.

Psychiatric units are often used as holding stations for problem drinkers rather than as a treatment center. This is a problem of those bringing such persons to the hospital (law enforcement and ambulances) not knowing what types of services are provided in the unit.

There is an apparent lack of psychiatrists in the state of Montana. The construction of beds for psychiatric services does not alone create effective psychiatric units. Havre has beds specifically set aside for psychiatric care, yet has no psychiatrist to staff them.

## 5.0 Estimate of Service Requirements

To accurately determine the appropriate number of psychiatric beds to be located in Montana hospitals, the total mental health system must be addressed. The Community Mental Health Centers in the state must complete their patient origin studies for realistic identification of the base population served.

The question of population served also has broader implications than geographic ones. Certain classes of people use hospital beds more or less frequently, and for different lengths of stay, than do others; and if the facility is set up to include or exclude these patients (for example, alcoholic or drug dependent patients, the elderly or mentally retarded), the need for beds will accordingly be altered.[9]

Table 3 indicates the projected average daily census and estimated bed needs for those communities which were described by the Governor's Mental Health Advisory Council, as needing to provide services in the future. The projected average daily census are made assuming that these areas will have use ratio similar to the average of the existing facilities. The bed need estimate is based on the probability that an unoccupied bed will be available 90% of the time when needed.

Table 2

NUMBER OF PSYCHIATRISTS BY SUBAREA
(as of September 1977 submitted by Montana Psychiatric Association)

| Subarea & Community | | Number of Psychiatrists |
|---|---|---|
| Eastern | | |
| Sidney | | 1 |
| Miles City | | 1 |
| Glasgow | | 1 |
| | Total | 3 |
| South Central | | |
| Lewistown | | 1 |
| Billings | | 7 |
| | Total | 8 |
| South Western | | |
| Butte | | 2 |
| Bozeman | | 1 |
| Helena | | 2 |
| Warm Springs | | 5 |
| | Total | 10 |
| North Central | | |
| Great Falls | | 5 |
| Havre | | 0 |
| | Total | 5 |
| North Western | | |
| Missoula | | 5 |
| Kalispell | | 2 |
| | Total | 7 |
| State Total | | 33 |

Table 3

ESTIMATED NUMBER OF ACUTE PSYCHIATRIC BEDS NEEDED IN SELECTED MONTANA COMMUNITIES IN 1985

| City | County | 1985 Pop.[1] | Projected ADC[2] | Estimated Bed Need[3] |
|---|---|---|---|---|
| Bozeman | Gallatin | 44,058 | 7.3 | 10 |
| Billings | Yellowstone | 126,106 | 2.1 | 30 - 21 = +7 |
| Butte | Silver Bow | 44,457 | 7.4 | 11 - 18 = -7 |
| Great Falls | Cascade | 88,274 | 14.7 | 17 - 28 = -9 |
| Havre | Hill | 19,641 | 3.3 | 4 - 3 = 1 |
| Helena | Lewis & Clark | 46,931 | 7.8 | 11 |
| Kalispell | Flathead | 56,402 | 9.4 | 13 - 3 = +10 |
| Miles City | Custer | 14,642 | 2.4 | 3 - 2 = +1 |
| Missoula | Missoula | 78,171 | 13.0 | 17 - 17 = 0 |

1. County Population - Department of Community Affairs Medium Range, 1985.

2. Based on an average use rate of 60.8 inpatient days per 1,000 population observed in the Great Falls, Missoula, and Billings psychiatric units in 1976.

3. Based on the probability that an unoccupied psychiatric bed will be available 90% of the time.

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## CLINICAL LABORATORIES

### GOALS, OBJECTIVES AND RECOMMENDATIONS

1) Quality laboratory services are an integral part of the health care system and should be available and easily accessible to every Montanan at a reasonable cost. To achieve this goal, the following measures should be explored:

   a. The feasibility of sharing or centralizing laboratory services. Examples where sharing or centralizing may be feasible are Billings, Great Falls, Missoula, Miles City, Helena, Butte, Warm Springs and Galen.

   b. Hospital and large independent laboratories should consider marketing their services to physicians and smaller laboratories.

2) The State Laboratory Division should put more emphasis than it currently does on providing continuing education and quality control programs, taking care not to duplicate existing resources, but filling gaps where they exist. The Division also should upgrade its laboratory registration system and coordinate it with the Montana Health Data Management System.

3) State registration, inspection and certification programs for laboratories should be centered in one agency of state government instead of being decentralized as is currently the case.

# CLINICAL LABORATORIES

## 1.0 Service Description

### 1.1 Definition

Clinical (medical) laboratory services examine specimens from the human body, including blood, urine, gastric juices and other body fluids, to help physicians detect, diagnose or monitor a patient's illness. They can be located at hospitals, group practice clinics, physicians' offices, independent sites, industrial sites, federal, state and local public health departments, and a variety of other settings.

The work performed at these laboratories can be separated into the following specialties and subspecialties:

MICROBIOLOGY
Bacteriology
Virology
Parasitology
Mycology

SEROLOGY
Syphilis
Nonsyphilis

IMMUNOHEMATOLOGY
HEMATOLOGY

CHEMISTRY AND PHYSICS
Clinical biochemistry
Sanitary chemistry
Toxicology
Radiobioassay

PATHOLOGY
Clinical
Anatomical
  Surgicals
  Necropsies
  Histopathology

CYTOLOGY

A glossary of the above terms is attached.

Each laboratory will not necessarily be capable of performing all of these procedures. For example, smaller laboratories may be capable of performing only simple hematology, urinalysis and chemistry studies, while other laboratories may specialize in microbiology, pathology, special chemistry, immunohematology, radiobioassay and other more sophisticated procedures.

Public health laboratories are concerned primarily with the prevention and control of infectious diseases, with epidemiologic studies of such diseases, and with internal and external environmental sanitation. In some instances, they also are concerned with, and involved in, providing quality control programs to clinical laboratories.

The studies performed at any particular laboratory will be determined by a number of factors, including the capabilities of the laboratory personnel, the range of medical specialties referring laboratory tests, the scope of medical services available in a community, and the volume of medical services in a community. All laboratory tests must be ordered by a physician.

One way to identify the types of studies performed is to identify levels of laboratory care. The College of American Pathologists, which sponsors a voluntary inspection and accreditation program for laboratories, identifies four levels of care through its proficiency testing programs. Those levels are:[1]

- Physicians Office Laboratories.

- Basic Laboratories - small hospital laboratories serving fewer than 100 beds or small independent laboratories.

- Comprehensive Laboratories - large hospital laboratories serving 100 or more beds and large independent laboratories doing sophisticated procedures in microbiology, chemistry, hematology and/or blood banking.

- Special Laboratories - sophisticated microbiology, serology, and toxicology laboratories.

## 1.2 Geographic Boundaries

This plan is intended to address laboratory services within Montana, and where possible, within each of the five Health Systems Agency subareas in the state.

## 2.0 Trends

It is estimated that 4 - 6 billion laboratory tests[2] are performed each year in the United States, at an annual cost of more than 12 billion dollars.[3] During the past several decades, a major trend in clinical laboratories has been toward heavier workloads. The demand for laboratory services is expanding at an annual rate of 14 - 18 percent.[4] Factors contributing to these heavier workloads include:

- Technological advances which have brought about new, often more sophisticated, difficult and time-consuming tests and procedures.

- Increasing use of the laboratory in preventive medicine, including mass screening of patients for early detection of illnesses. (For example, pap smears for cervical cancer, tuberculosis tests, chemistry profiles, etc.).

- More extensive use of laboratory tests by the medical profession, partly because of more emphasis on use of the laboratory in physician training and partly because physicians are defending themselves against the threat of malpractice suits.

- Increased use of the laboratory in monitoring drug effectiveness and drug interactions.

- Increased reimbursement for laboratory tests by third-party payors.

- Population increases.

To meet the demands placed upon them by heavier workloads, many laboratories have automated their equipment procedures. This has made it possible to increase their capacity to process larger numbers of test samples and rapidly perform multiple tests on a single sample, with increased accuracy. However, manual methods are still used by many laboratories and serve as the basis for automated procedures. They continue to be used both for routine work and for back-up if automated equipment fails. Examples of the types of instrumentation that may be used in the laboratory are included in Table 1.

In many smaller laboratories, installation of costly, sophisticated automated equipment is infeasible because the volume of tests is insufficient to justify or maintain high utilization levels. Automation is more feasible in laboratories which perform a high volume of similar tests. To create this volume, and to eliminate costly duplication of sophisticated equipment, many areas have begun sharing or centralizing laboratory services.

Still another trend in laboratory services has been greater regulation. Part of this regulation is the result of Medicare/Medicaid requirements. However, some of the regulation has come about because of allegations of laboratory inaccuracy, fraud and abuse. Congress has passed the Clinical Laboratory Improvement Act of 1967 (CLIA 67) to regulate laboratories operating in interstate commerce and is considering a CLIA 77 which would impose similar regulations on all laboratories.

## 3.0 Guidelines, Standards and Criteria

### 3.1 Costs

The United States currently is spending approximately 12 billion dollars a year for health laboratory services, which is about 10 percent of what it spends annually on the total health care delivery system.[5] Because of laboratories' expense, they should be cost efficient. The following guidelines are presented to promote that concept:

- Laboratories should develop an acceptable cost-accounting system and make their cost data available to rate reviews and the public.[6]

- Duplication of laboratory tests and laboratory equipment should be avoided where possible, by means of accepting tests done previously where quality is maintained, and by sharing or centralizing laboratory equipment where feasible.

- Laboratories should participate in an accepted quality control program to minimize the cost and hazards of laboratory errors.

Table 1

Instrumentation Commonly Used In Clinical Laboratories
By Laboratory Subareas

| CLINICAL CHEMISTRY | HEMATOLOGY | HISTOLOGY AND CYTOLOGY | MICROBIOLOGY | ROUTINE ANALYSIS | IMMUNOLOGY |
|---|---|---|---|---|---|
| Spectrophotometer | Aliquot mixers (for whole blood samples | Automated stainers | Microscopes | Centrifuge | Microtiter accessories |
| pH meter and/or blood gas instrument | Blood cell counters (automatic) | Centrifuge | -Light microscope | Microscope | -Disposable titration plates |
| Flame photometer | Blood typing devices (automatic) | Drying ovens | -Fluorescent | Test tube racks | -Microdiluters, 5 and 50 lambda |
| Microgasometer | Coagulation devices | Embedding center | -Calibrated oculars | Bunsen burner | -Disposable pipet 25 and 50 lamb |
| Water baths-controlled to +0.5°C | Centrifuge floor model | Files (slide and paraffin block) | -Stereo microscope | Spectrophotometer | -Plate holders a sealers |
| Heat blocks | Centrifuge table model | Freezing microtome | Centrifuges | Fume hood | -Wash rack |
| Balances-trip and analytical | Dilutors (automatic) | Microphotography apparatus | -Floor model | | -Centrifuge carr |
| Pipetting aids and dispenser | Fibrometer | Microscope | -Table model | | -Vibro mixer |
| Miscellaneous glassware and pipettes | Fibrometer gun pipette | Microtomes | -Auto-plater to inoculate plates or antibiotic sensitivity tests | | -Automated equipment (availabl and optional) |
| Centrifuges-bench and floor model | Hand tally | Paraffin oven | Sterilizers | | Centrifuges |
| Chromatography-thin layer and/or gas liquid | Hemocytometers | Slide holders | -Dry heat | | -Bench |
| Fluorometer | Micro Hematocrit centrifuge | Staining racks | -Autoclaves | | -Floor |
| Oximeter | Microscopes | Tissue processors (vacuum or non-vacuum) | Incubators | | Water baths |
| Rotators-shakers | Microscope lamps | Vacuum oven | -$CO_2$ | | Glassware-tubes, flasks, beakers pipettes, etc. |
| Burettes/Burette Stands | 37° Needle temperature blocks | Water baths | -Constant temperature-aerobic | | Test tube racks, various sizes |
| Timers-mechanical and electrical | Micro Hematocrit reader | | -Water baths | | Incubator |
| Photographic Equipment | Pipette rotators | | -Dry heating blocks | | Freezer - at leas 20°C |
| Electrophoresis equipment | Spectrophotometer | | Anaerobic instrumentation | | Rotator |
| Osmometer | Spring-wound clocks | | -Brewer jars or a modification of same | | |
| | Sedimentation rate tube rack | | -Glove box | | |
| | Slide strainer | | -Roll tube anerobic instrument | | |
| | Staining racks | | Refrigeration | | |
| | | | -Work-in or stand-up refrigerators | | |
| | | | -Stand-up freezers-70°C | | |

Instrumentation Commonly Used In Clinical Laboratories
By Laboratory Subareas (Continued)

| CLINICAL CHEMISTRY | HEMATOLOGY | HISTOLOGY AND CYTOLOGY | MICROBIOLOGY | ROUTINE ANALYSIS | IMMUNOLOGY |
|---|---|---|---|---|---|
| | Tab counters (diff)<br>37° wet water bath | | Biological safety cabinet<br>Gas chromotograph<br>Gases<br>-$CO_2$<br>-$O_2$ free $CO_2$<br>-Helium<br>Microtiter equipment<br>Quebec colony counter | | |

*Taken from Considerations and Criteria for Institution-Based Clinical Laboratory Review, Orkand Corporation, November, 1976, p. I-9.

- Time intervals between ordering laboratory tests and receiving test results (referred to as turn around time) should be minimized to avoid extra days in the hospital or extra visits to the physician's clinic or physician's office.

3.2 Availability

At least emergency laboratory services should be available to physicians (either at a hospital or by arrangement with another laboratory) on a 24-hour a day, 7-day a week basis, with laboratory personnel capable of performing needed tests available on at least an on-call basis.

3.3 Accessibility

Many laboratory tests must be performed within a specified time limit. If the specimen received by a laboratory has been substantially delayed, the results of individual laboratory tests are not useful for accurate diagnosis. Some specimens are particularly sensitive to transportation delay. Thus, the proposed facility should be located within an acceptable distance from where the specimens are drawn. Two hours can serve as a general guide for microbiology and 6 to 8 hours can serve as a guideline for most other laboratory tests.[8]

3.4 Continuity

Laboratories must develop a communication system between their staffs and the non-laboratory medical and non-medical staffs they service. This system should include a method for non-laboratory medical staff to order tests and deliver specimens for testing and a method for laboratory staff to report on the condition of the specimens received, to report on the analyses performed, and the results of the analyses. The system should include adequate documentation.

3.5 Quality

Because an incorrect test result by a clinical laboratory can have disastrous effects on a patient who does not receive diagnosis and treatment and because of concern about inaccuracy and incompetency at clinical laboratories, quality control is of utmost importance. All clinical laboratories (including those located at hospitals, group practices, physicians' offices, public health departments and independent sites) must participate in a quality control program which includes, at a minimum, checks for the following:

- Successful participation in an accepted proficiency testing program which involves testing unknown samples sent to the laboratory by the testing program.

- Personnel perform only those tests for which they have proper training and expertise.

- Proper maintenance of equipment, reagents and supplies.

- Use of standard operating procedures manual listing approved methodologies for each procedure or test performed.

- Use of a valid specimen and records management system.

- Availability of continuing medical education programs for laboratory staff, as well as education of physicians in the effective use of laboratory services.

Examples of available quality control programs include those of the College of American Pathologists, the National Center for Disease Control, the American Association of Bioanalysts, and the American Society for Internal Medicine.

## 4.0 Description of the Present Situation

### 4.1 Inventory and Utilization Levels

It is presently difficult to determine exactly what procedures are available in Montana, what procedures must be referred out of state, and how many procedures are done. Indeed, it is difficult to determine even how many laboratories are in Montana. The reason for this is that although each laboratory in the state is supposed to register with the Laboratory Division of the State Department of Health and Environmental Sciences, the Division has no systematic method for assuring that this is done. In addition, the Division's registration form asks for information about how many procedures are being done in various test categories, but the reliability of each laboratory's report is questionable. Some are clearly estimates and it is difficult to determine what tests a laboratory should include in a particular category.

However, data taken from these reports gives us at least a partial picture of clinical laboratory services in Montana. More than 4.5 million laboratory tests were performed in 1976 in the 110 clinical laboratories registered with the Division. A breakdown of where these tests were performed, by laboratory category and region, is shown in Table 2. The majority, or 51 of Montana's 63 hospital laboratories, can be classified as basic laboratories, serving less than 100 beds. Only 12 hospital laboratories can be classified as comprehensive, serving more than 100 beds.

All but three of the independent and physician laboratories perform less than 50,000 procedures per year. The State Laboratory Division, a public health laboratory, performs more than 100,000 tests per year.

Eight independent laboratories, 29 physician laboratories, three public health laboratories, five university or Indian Health Service laboratories and one nursing home laboratory are registered with the Laboratory Division. The Veterans Administration facilities in the state are not registered with the Division and some physicians' office laboratories probably are not registered.

Table 2

NUMBER OF LABORATORIES LABORATORY TESTS PERFORMED IN MONTANA

BY LABORATORY CATEGORY AND SUBAREA, 1976*

| | Eastern | | NC | | NW | | SW | | SC | | State | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Labs | No. of Tests | No. of Labs | No. of Tests | No. of Labs | No. of Tests | No. of Labs | No. of Tests | No. of Labs | No. of Tests | No. of Labs | No. of Tests |
| Hospital Laboratories | 16 | 262,693 | 10 | 791,547 | 12 | 573,911 | 17 | 749,933 | 1 | 895,820 | 64 | 3,279,104 |
| Independent Laboratories | 1 | 6,770 | - | - | 5 | 269,753 | 1 | 125,709 | 1** | - | 8 | 402,292 |
| Physician's Laboratories | 4 | 60,062 | 6 | 288,960 | 5 | 33,979 | 9 | 170,091 | 5 | 104,363 | 29 | 665,455 |
| Public Health Laboratories | - | - | - | - | 2 | 4,673 | 1 | 117,190 | - | - | 3 | 121,373 |
| University, Indian Health Laboratories | 1 | 4,000 | 1 | 41,275 | 1 | 6,216 | 1 | 10,733 | 1 | 9,920 | 5 | 72,144 |
| Nursing Home Laboratories | - | - | 1 | 1,165 | - | - | - | - | - | - | 1 | 1,165 |
| TOTAL | 22 | 333,725 | 18 | 1,122,947 | 25 | 393,534 | 28 | 1,181,724 | 16 | 1,010,103 | 110 | 4,543,033 |

*Data for independent and physicians laboratories is for 1975. Hospital laboratory data from 1976. Data are taken from reports filed by laboratories with the Laboratory Division of the Montana Department of Health and Environmental Sciences. This data includes the majority, but not all, of the laboratories in the state.

**New lab, no data available.

The majority of tests in the state, or 73.5 percent, are clinical chemistry and hematology studies. Approximately 8.2 percent are urinalysis and 6.7 percent are bacteriology studies.

Most types of laboratory procedures can be performed in the state, with the exception of extremely sophisticated tests which are referred to Seattle, Denver and other out-of-state medical centers. In addition, some physicians send a large number of specimens to out-of-state laboratories for routine examinations because the out-of-state laboratories can perform the tests at lower costs.

Twenty-six pathologists practice in Montana. Since every hospital laboratory is required to have the services of a pathologist on at least a consulting basis, many of these pathologists serve several hospitals. Montana hospital licensing laws require periodic visits by these pathologists to the hospitals, but because of shortage of the pathologists' time, arrangements are being made to allow a chief medical technologist from a larger hospital, working under the supervision of a pathologist, to perform some of these visits.

The number of medical technologists and technicians in the state is considered adequate, but there is a problem of maldistribution between urban and rural areas. Colleges and universities in the state training medical technologists are Carroll College in Helena, the University of Montana in Missoula and Montana State University in Bozeman. Medical technology internships are available at St. James Hospital in Butte and Columbus and Deaconess Hospitals in Great Falls. In addition, the Missoula hospitals, in cooperation with the University of Montana, have recently begun an internship program.

## 5.0 Estimate of Service Need

An estimate of laboratory service need should be based on:

- Gaps in existing services.
- Health status of area residents, including incidence and prevalence of specific illnesses and environmental problems affecting health.
- Manpower, including a breakdown of the number and types of physician specialties and the availability of medical technologists and other support personnel.
- Estimated growth of laboratory services.
- Comparisons of service area and population with similar areas.

Because of the problems described in obtaining reliable data on clinical laboratories, it is difficult to determine where gaps exist in laboratory services in the state.

The health status of area residents currently is being assessed by the Montana Health Systems Agency and the State Health Planning and Resource Development Agency, and will be addressed as part of this need estimate at a later time. Manpower will also be addressed at a later time in this plan.

The estimated growth of laboratory services, based on trends over the past several years, is 14 - 18 percent per year. To what degree laboratories will need to expand will be determined by a combination of the above factors.

Individual laboratories can compare the size of their service areas and hospitals with similar laboratories to approximate the v lume they may expect. Nationally, the trend is that hospital laboratories will perform more tests per hospital admission as the size of the hospital increases. According to one report,[9] the median number of laboratory tests per hospital admission, by the size of the hospital was as follows in 1976:

| Less than 50 Beds | 50-74 Beds | 75-99 Beds | 100-149 Beds | 150-199 Beds | 200-299 Beds |
|---|---|---|---|---|---|
| 14.73 | 17.66 | 19.35 | 22.19 | 22.73 | 26.93 |

A comparison of Montana hospitals with this national data is not possible without a breakdown of inpatient versus outpatient tests. This data, although gathered as part of the hospital's annual report form, is not reliable because hospitals apparently reported laboratory visits instead of tests.

The number of outpatient tests performed in an individual laboratory will vary according to the number of other laboratories in a service area and the types and numbers of health personnel available.

## GLOSSARY

Microbiology--The science which deals with the study of microorganisms, including bacteria, molds and pathogenic protozoa.

Bacteriology--The science which deals with bacteria and their relation to medicine, industry and agriculture.

Mycology--A branch of science dealing with fungi.

Virology--The branch of microbiology concerned with viruses and virus diseases.

Parasitology--The science or study of parasites and those infected with parasites.

Serology--The science dealing with serums (the watery portion of an animal fluid remaining after coagulation) and especially their reactions.

Syphilis Serology--Examinations of serums for the contagious venereal disease, sy

Non-Syphilis Serology--A laboratory category of serology tests, which includes all those not related to tests for syphilis.

Immunohematology--The branch of medicine dealing with diseases of the blood of which the cause, the development of disease, or the clinical manifestations have been s to be determined by an antigen-antibody reaction.

Hematology--A branch of biology which deals with the blood and blood-forming orga

Chemistry--A science that deals with the composition, structure and properties of substances and of the transformations they undergo.

Physics--A science that deals with matter and energy and their interactions in the fields of mechanics, acoustics, optics, heat, electricity, magnetism, radiation, atomic structure, and nuclear phenomena.

Clinical biochemistry--The chemistry of living organisms and of vital processes, especially as it relates to patient care.

Sanitary chemistry--The chemistry which relates to the establishment of environmenta conditions favorable to health.

Toxicology--The sum of what is known regarding poisons; the scientific study of poi their actions, their detection, and the treatment of the conditions produced by the

Radiobioassay--Determination of the active power of a sample of radiation by noting its effect on animals or humans as compared with the effect of a standard preparati

Pathology--The study of the essential nature of diseases and especially of the structural and functional changes produced by them.

Clinical pathology--pathology applied to the solution of clinical problems, espe the use of laboratory methods in clinical diagnosis.

Surgicals--examinations of tissues removed during surgery.

Necropsies--examinations of bodies after death.

Histopathology--pathology dealing with a branch of anatomy that deals with the minute structure of animal and plant tissues as discernible with the microscope.

Cytology--a branch of biology dealing with the structure, function, multiplication, pathology and life history of cells.

## RESOURCES


1. "CAP Statement on the Clinical Laboratories Improvement Act of 1975", College of American Pathologists, Oct. 1975, p.p. 372-373.

2. "Clinical Labs Reviewed", Lab World, Jan. 1976.

3. Center for Disease Control, Bureau of Labs, "Goals and Standards for Laboratory Quality Assurance", Atlanta, GA, March 1976, p.6.

4. Ibid.

5. Ibid., p.2.

6. Ibid., p.7.

7. The Orkand Corporation, Considerations and Criteria for Institution-Based Clinical Laboratory Review, Nov. 1976, p. III-27.

8. Ibid., p. III-4.

9. Ibid.

## DIAGNOSTIC IMAGING

### GOALS, OBJECTIONS AND RECOMMENDATIONS

Diagnostic imaging services should be available and easily accessible to all Montanans at a reasonable cost. To reach this goal, the following objectives and recommendations are presented:

1) Unnecessary duplication of expensive and extremely sophisticated imaging systems should be avoided.

2) Inpatient and outpatient facilities within a service area should share diagnostic imaging systems, where possible.

# DIAGNOSTIC IMAGING

## 1.0 Service Description

### 1.1 Definition

Diagnostic imaging, a term used to describe those medical practices which make possible the visualization of internal body structures, includes diagnostic radiology, diagnostic nuclear medicine, and diagnostic ultrasound. Each of these three modes of diagnostic imaging has its own areas of strength and weakness, and they are considered complementary to one another raher than duplicative.

Diagnostic radiology is the most widely used of the three, and is considered an essential part of any diagnostic imaging program. Both nuclear medicine and ultrasound are in a period of expansion with more and more hospitals expanding their services to include them. Following is a brief introduction to each of the three modes.

#### Diagnostic Radiology

Diagnostic radiology is that branch of medicine which involves the use of X-rays which are a powerful aid in medical diagnostic work, due to their high degree of penetration into tissue which makes possible a visualization of the internal structures of living organisms. In penetrating tissue, X-rays are absorbed to an extent determined by the density of the body structure through which they pass. In most cases, the resulting image represents a shadow of the body structures in the path of the X-ray beam, with overlying structures super-imposed in the image.

A taxonomy of diagnostic radiology must be based on both the equipment used and on the type of procedure performed.

In general, the degree of specialization, with respect to the equipment used and the room in which procedures are performed, will vary with the size of the radiological department. A small hospital may perform all of its procedures in one room with a limited amount of radiological equipment. Larger hospitals with more sophisticated radiological departments will have certain rooms for certain procedures and many pieces of equipment, each intended for specific types of procedures. Although there can be a large number of radiological examining rooms, each with a specific purpose, there are four main categories:

- A Radiographic Room
- A Radiographic and Fluoroscopic Room
- A Special Purposes Equipment Room
- A Special Procedures Room

Radiological procedures can be classified by whether they are non-invasive, in which no contrast media is used, or invasive, in which a contrast media is used, and by their degree of complexity. Taking into consideration the type of equipment required for each procedure, five general types of procedures and studies can be identified:

- Simple Non-invasive - (Radiographic Room) simple film studies of the head, spine, chest, abdomen and extremities.

- Complex Non-invasive - (Special Equipment Room) tomography.

- Simple Invasive - (Radiographic and Fluoroscopic Room) barium studies of gastrointestinal tract, intravenous studies of kidneys and other simple injections.

- Complex Invasive - (Radiographic and Fluoroscopic Room) Myolegraphy, Lymphangiography, Bronchography, Venography, Arthrography, Pneumonencephalography, Hysterosalpingography.

- Complex Invasive - (Special Procedures Room) all arteriograms of head, chest, abdomen, extremities and heart.

Nuclear Medicine

Diagnostic nuclear medicine encompasses a wide variety of procedures involving the administration of radioisotopes. Unlike diagnostic radiological procedures, in which radiation exposure originates outside the patient's body, nuclear medicine procedures involve detection of radioisotopes that have been entered into the patient's body. A chemical substance is tagged with a radioisotope and is administered to the patient. The radioactive tracer (radioisotope) then accumulates in the organ that is being studied, and special radiation detection equipment produces either organ scans or graphs or counts that chart the function of the organ.

Nuclear medicine procedures are divided into two main groups: in vivo and in vitro. There are two types of in vivo procedures, both of which involve the injection of a tracer into the patient. In one type the tracer is measured while still in the patient, but in the other type the tracer is measured in a tissue or fluid sample taken from the patient. In vitro procedures do not require the injection of tracers.

Sensitive instrumentation, computer techniques and short-lived radioisotopes which minimize the period of irradiation of patient tissues have made it possible to study almost every body organ and organ system.

The major types of diagnostic and monitoring equipment found in a diagnostic nuclear medicine service include:

A Rectilnear Scanner, a Scintillation Camera or "Gamma Camera", a Well Counter, and a Dose Calibrator.

According to the size of the department and levels of utilization in nuclear medicine service, various complements of equipment become appropriate. For a smaller hospital it is probably sufficient to have a single probe rectilinear scanner and a well counter. More sophisticated nuclear medicine departments will have equipment consistent with the degree of diagnostic capability they must possess and the potential for adequate utilization. Additions to the basic setup mentioned above may include a dual-probe rectilinear scanner, a scintillation camera, or a computerized system. Each piece of equipment will also be available in different models depending upon the needs of the department.

Diagnostic Ultrasound

Unlike diagnostic radiology and nuclear medicine, diagnostic ultrasound does not make use of radiation. Instead, it functions much like sonar, utilizing sound waves to penetrate tissue. By measuring and recording the echoes of these sound waves it is possible to measure the relative absorption values of the tissue being examined, and hereby identify what the tissue is.

Simply stated, a diagnostic ultrasound system is made up of two components: a transducer which is used to both transmit and receive sound pulses and an oscilloscope for displaying the sound echoes.

The way in which the echoes are displayed will depend upon the diagnostic study being done and the type of information being sought. The following methods of display are most commonly used:

A-mode - In the A-mode, echoes are displayed along the oscilloscope base line. What is shown is a series of vertical peaks which are proportional to the amplitude of the sound echo. The A-mode's primary use is in echoencephalography, which is a valuable procedure in measuring fetal head size, detecting brain injury in new borns, evaluating head injuries, and detecting space-occupying lesions.

M-mode - The M-mode display is used to provide a graphic record of the motion of reflecting surfaces. The greatest use of the M-mode display has been in cardiology.

B-scan - The B-scan provides a two dimensional cross-sectional view of anatomy and is, therefore, sometimes referred to as ultrasonic tomography. B-scanning has applications for most parts of the body including the head and neck, chest, and abdomen and is used whenever two dimensional images are needed.

Real-time scanning - Real-time scan techniques provide a way to observe moving structures. This is possible because of the very short time required for a complete scan - a fraction of a second. Scans are repeated at a rapid rate and continuously displayed on an oscilloscope or television monitor.

## 1.2 Geographic Boundaries

Health care facilities outside of the state of Montana do not play a significant role in the provision of diagnostic imaging services to the people of Montana. These guidelines will, therefore, only address these services in the state of Montana.

## 2.0 Background and Service Trends

The trend in diagnostic imaging has been toward increased use of nuclear medicine and ultrasound. Whereas diagnostic radiology has played the dominant role in diagnostic imaging, nuclear medicine and ultrasound have become increasingly important in an increasing number of medical facilities. One of the reasons for this is that radiologists are presently being trained in all three modes of diagnosis. The radiologist's familiarity with all three modes of diagnosis together with new equipment in nuclear medicine and ultrasound have resulted in an increased dependence on the latter forms of diagnosis and a growing appreciation of the strengths and weaknesses of the three diagnostic modes. Increasingly it is being found that a complete diagnostic service should contain radiology, nuclear medicine and ultrasound.

The trend in equipment for diagnostic imaging has been similar to that for other forms of media equipment: increased sophistication and cost. The age of the computer has arrived in diagnostic imaging, and all three modes now have computerized systems available.

## 3.0 Service Guidelines and Criteria

### 3.1 Costs

Tables 1A and 1B give approximate prices for a variety of diagnostic imaging systems. These tables show that there is a wide divergence in prices of diagnostic systems. Because of the rapid increase in price associated with increases in a system's sophistication and capacity, hospitals or other facilities purchasing diagnostic imaging equipment should be cost conscious and purchase equipment for which they have an actual and documented need. Such equipment should be utilized at a financial break-even point within approximately one year of its initial operation date.

### 3.2 Availability

Diagnostic imaging services should be available 24 hours a day, 7 days a week, with personnel available for performing interpretive diagnostic procedures available on at least an on-call basis.

### 3.3 Accessibility

Diagnostic imaging services encompass a wide variety of diagnostic capabilities. Basic radiographic services are available in most hospitals and in many clinics, whereas nuclear medicine and ultrasound are more limited in distribution. To make appropriate diagnostic imaging services available to all persons requiring them, facilities should have established referral patterns to other facilities with more sophisticated diagnostic capabilities. Ability to pay should not be a consideration in the provision of such services.

### 3.4 Continuity

The referring physician should receive the results of diagnostic imaging studies within a reasonable amount of time when patients are referred to a hospital with more sophisticated diagnostic imaging capabilities. Earlier studies should not be duplicated unless it is necessary to monitor changes in the patient's condition or to improve the quality of the study image. Unnecessary duplication of diagnostic procedures should be avoided.

### 3.5 Quality

Like other complex electronic, mechanical and chemical equipment, diagnostic imaging equipment performance and calibration are subject to variation and drift over time. If undetected, this can lead to deterioration in the quality of images produced and in the case of radiology, increased radiation hazards through increased retakes. The diagnostic imaging service should, therefore, provide for regular calibration and maintenance of all diagnostic imaging equipment.

Diagnostic imaging services should be staffed by personnel with appropriate training and expertise.

### 4.1 Inventory and Utilization Levels

Tables 2, 3 and 4A make use of 1975 data gathered in a Department of Health and Environmental Sciences survey of diagnostic imaging services in Montana hospitals. Table 2 shows the total number of radiologic procedures performed at hospitals of less than 100 beds. Also shown are the number of radiologic procedures per bed. These figures can be used as a basis for comparison of the relative volumes of radiology departments in hospitals of differenct sizes. Table 3 presents the same information for hospitals of 100 or more beds. As can be seen, larger hospitals with more sophisticated radiological services perform a greater number of procedures per bed than do the smaller hospitals. The comparative figures do not necessarily represent under or over utilization of radiologic services, but may be reflective of the types of specialists associated with the hospital, levels of sophistication of equipment in the radiology department, alternative forms of diagnostic imaging available, etc.

As can be seen on Tables 2 and 3, hospitals under 100 beds averaged 75 radiological procedures per bed, while hospitals over 100 beds averaged 94 procedures per bed.

Table 4A contains information on radiologic and nuclear medicine procedures for those facilities which reported on their nuclear medicine services in the 1975 survey. The first four columns repeat the information given in Tables 2 and 3, and the last two columns show nuclear medicine procedure per bed and the ratio of nuclear medicine procedure to radiologic procedures. The procedures per bed data enables one to compare the relative volume of nuclear medicine services between hospitals of varying sizes, and the ratios in the last column give an indication of the number of nuclear procedures as compared with radiologic procedures. As can be seen, on the average, the number of nuclear medicine procedures was only 3.9% of the number of radiologic procedures. The size of this ratio for any individual hospital yields information as to the relative size of the nuclear medicine as compared to the overall diagnostic imaging services. Smaller ratios can indicate a relatively small nuclear medicine operation, or may simply indicate that the service is new to the facility.

Table 4B gives the same type of information as Table 4A, but for six hospitals located outside of Montana. The figures represent 1973 data and only hospitals A, B, and C are comparable with Montana hospitals.

At the time of the diagnostic imaging questionnaire, only seven hospitals reported ultrasound services.

## 4.2 Problems

The numbers of diagnostic imaging procedures performed appears to have increased significantly since 1975 and the number of hospitals with nuclear medicine and ultrasound services also has increased. The data shown in Tables 2, 3, and 4A does not, therefore, accurately depict the current situation with respect to volume or scope of imaging services offered in Montana. Some hospitals have expanded both the volume and scope of their services dramatically and this should be kept in mind when making comparisons between individual hospitals.

It should also be noted that there is a large variety of procedures that fall within each of the three modes of diagnostic imaging and to accurately depict the scope and volume of services, those various procedures would have to be broken out of each of the three diagnostic modes. Tables 2, 3, and 4A should, therefore, be viewed as a general indication as to volume and scope of diagnostic imaging services in Montana.

## 5.0 Estimate of Service Requirements

It is extremely difficult to estimate the need for such a wide variety of services as is encompassed in the three diagnostic imaging

modes. As shown earlier, the range of prices for equipment to provide such services begins at about $20,000 and goes up to $500,000.

Data on numbers of diagnostic imaging procedures per bed (as shown in Tables 2 and 3) can be used to approximate the number of procedures a hospital with a given bed size will perform. For nuclear medicine services the average ratio of nuclear medicine procedures to radiological procedures (as shown in the last column of Table 4A) can be used to approximate the number of nuclear procedures that will be done. In a similar hospital proposing to initiate nuclear medicine services, multiply the number of radiological procedures performed by the average ratio for hospitals with a similar number of beds.

Both nuclear medicine and ultrasound require a substantial number of referrals from physicians. Before establishing such services, a study should be made to assure that there is a sufficient number of physicians from enough specialties to assure adequate utilization of such services.

One further rule of thumb that should be used in estimating service requirements is that diagnostic capability should be consistent with treatment capability. A hospital should be capable of treating those illnesses that it diagnoses.

TABLE 1A

Pricing (Source Picker)

Diagnostic Radiology

Radiographic - $30,000 - General radiographic unit with horizontal table; 300 ma. single phase power

Simple radiographic and Fluoroscopic - $70,000
No T.V. - for gastrointestinal studies & simple injections

Full R & F room - $200,000 with T.V., big generator

General Purpose Special Procedures Room - $350,000 - $450,000

Nuclear Medicine

Basic limited service - $30,000; rectilinear scanner
Thyroid uptake system, well counter

Full range nuclear medicine - $70,000, add scintillation camera

More complete system - up to $200,000

Ultra-sound

M-mode for cardiology - $20,000 to $70,000

B scan - $70,000

Real time - $110,000

TABLE 1B

Pricing (Source G.E.)

Diagnostic Radiology

Radiographic - $25,000 to $40,000

Basic radiographic and Fluoroscopic - $90,000 - $120,000; no T.V. Gastrointestinal studies and simple injections

Full R & F with larger capacity generator and T.V. - $170,000 to $200,000

R & F for contrast - capability to perform angiograms - $250,000

Full General Special Procedures Room - $500,000

Nuclear Medicine

Basic scanner service - $35,000 - $40,000

Basic service & scintillation camera - $60,000 to $70,000

Complete system - up to $175,000

Ultra-sound

Simple M-mode system for cardiac studies - $20,000

Complex scan system - $50,000

Computer system - $130,000

TABLE 2 (1975 Data)

| Hospital | Beds | Radiologic Procedures | Radiologic Procedures / Beds |
|---|---|---|---|
| Ruby Valley | 20 | 1,244 | 62 |
| Barrett Hospital | 31 | 1,604 | 52 |
| St. Luke Community | 25 | 2,365 | 95 |
| St. Joseph | 40 | 3,444 | 86 |
| Community Memorial | 55 | 4,479 | 81 |
| Broadwater Hospital | 21 | 40[illegible] | 19 |
| Malta Hospital | 30 | 854 | 29 |
| Boulder River | 23 | 1,961 | 46 |
| Wheatland Memorial | 25 | 2,132 | 85 |
| Trinity Hospital | 42 | 2,412 | 57 |
| Community of Anaconda | 60 | 8,148 | 136 |
| Choutcau County | 17 | 939 | 55 |
| Glendive Community | 46 | 4,550 | 99 |
| Poplar Community | 22 | 1,611 | 73 |
| Holy Family | 30 | 2,669 | 89 |
| Shodair | 35 | 1,753 | 50 |
| Mineral County | 10 | 876 | 88 |
| Clark Fork Valley | 20 | 2,742 | 137 |
| Roundup Memorial | 17 | 1,174 | 69 |
| Powell County | 35 | 2,100 | 60 |
| Livingston Memorial | 54 | 3,600 | 67 |
| Pondera County | 50 | 3,782 | 76 |
| Central Montana | 50 | 4,480 | 89 |
| Kalispell | 91 | 11,000 | 121 |
| Missoula General | 57 | 3,478 | 61 |
| Mean | | | 75 |

TABLE 3 (1975 Data)

| Hospital | Beds (Excluding Psychiatric) | Radiologic Procedures | Radiologic Procedures / Beds |
|---|---|---|---|
| St. Patrick | 200 | 18,762 | 94 |
| Missoula Community | 105 | 8,416 | 80 |
| Northern Montana | 120 | 11,284 | 94 |
| Billings Deaconess | 176 | 16,628 | 94 |
| St. Vincent's | 215 | 29,843 | 139 |
| Columbus | 195 | 20,073 | 103 |
| Montana Deaconess | 254 | 27,540 | 108 |
| St. Peter's | 144 | 18,000 | 125 |
| St. James | 180 | 18,435 | 102 |
| Silver Bow General | 140 | 8,413 | 60 |
| Bozeman Deaconess | 104 | 9,027 | 87 |
| Holy Rosary | 120 | 5,300 | 44 |
| Mean | | | 94 |

TABLE 4A (1975 Data)

| Hospital | Beds (Excluding Psychiatric) | Radiologic Procedures | Nuclear Medicine Procedures | Radiologic Procedures / Beds | Nuclear Procedures / Beds | Nuclear Procedures / Radiologic Procedures |
|---|---|---|---|---|---|---|
| Missoula Gen. | 57 | 3,478 | 174 | 61 | 3.1 | .050 |
| St. Patrick | 200 | 18,762 | 670 | 94 | 3.4 | .036 |
| Missoula Comm. | 105 | 8,416 | 131 | 80 | 1.2 | .016 |
| Northern Montana | 120 | 11,284 | 374 | 94 | 3.1 | .033 |
| Billings Deac. | 176 | 16,628 | 940 | 94 | 5.3 | .056 |
| St. Vincent's | 215 | 29,843 | 891 | 139 | 4.1 | .030 |
| Columbus | 195 | 20,073 | 826 | 103 | 4.2 | .041 |
| Montana Deac. | 254 | 27,540 | 1,215 | 108 | 4.8 | .044 |
| St. Peter's | 144 | 18,000 | 1,367 | 125 | 9.5 | .076 |
| St. James | 180 | 18,435 | 1,083 | 102 | 6.0 | .059 |
| Kalispell Region. | 91 | 11,000 | 268 | 121 | 2.9 | .024 |
| Pondera County | 50 | 3,782 | 114 | 76 | 2.3 | .030 |
| Central Montana | 50 | 4,400 | 58 | 89 | 1.2 | .013 |
| Mean | | | | 99 | 3.9 | .039 |

TABLE 4B*

| Hospital | Beds (Excluding Psychiatric) | Radiologic Procedures | Nuclear Medicine Procedures | Radiologic Procedures / Beds | Nuclear Procedures / Beds | Nuclear Procedures / Radiologic |
|---|---|---|---|---|---|---|
| A | 140 | 8,803 | 669 | 63 | 4.8 | .076 |
| B | 200 | 23,552 | 1,143 | 118 | 5.7 | .048 |
| C | 230 | 29,028 | 1,217 | 126 | 5.3 | .042 |
| D | 350 | 39,341 | 2,624 | 112 | 7.5 | .067 |
| E | 450 | 74,000 | 4,559 | 164 | 10.1 | .061 |
| F | 535 | 108,212 | 4,915 | 202 | 9.2 | .045 |

*Modification of table found in Hospitals, J.A.H.A., October 1, 1973

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## LONG-TERM CARE FACILITIES

## GOALS, OBJECTIVES AND RECOMMENDATIONS

The principle goal of these guidelines is to encourage the availability, equitable distribution and appropriate use of an adequate number of long-term beds in Montana. Inappropriate placement of long-term care patients in nusring homes through the availability of excess beds is to be discouraged. In concert with this goal, the following policies and activities are recommended:

(1) In rural, sparsely populated communities with bed needs of less than 40, the development of combination hospital/long term care facilities should be encouraged. The local economies should be reviewed in depth by the review committees.

(2) The development of alternatives to long-term care facilities should be stressed and be given preference over the future construction of these facilities. The HSA should identify the various sources of federal funds to assist financing retirement homes, group homes, and other less restrictive living arrangements. Programs providing seed money for the establishment of adult foster care programs, geriatric day care centers and home health care agencies should be identified and solicited. In addition, the HSA should work toward a more stable reimbursement framework for these alternatives.

(3) The use of trained Geriatric Nurse Practitioners with expanded functions in long-term care facilities should be encouraged.

(4) Nursing home district councils should voluntarily try to develop and promote a service to help patients, their families and physicians identify appropriate facilities with beds available.

(5) Coordination between the HSA and all groups affiliated with the aged should be established to identify the specific health problems of the elderly.

(6) Within the next year, a committee representing providers, reimbursement agencies, PSRO, and licensing agencies within Montana should be formed to develop specific criteria for level of care.

(7) If the swing bed concept is implemented in Montana, the type of long-term care provided by facilities participating in this program should be consistent with Medicaid guidelines for intermediate and/or skilled care.

# LONG TERM CARE FACILITIES

## 1.0 SERVICE DESCRIPTION

Long term care is the provision of that range of services - physical, psychological, spiritual, social, and economic - needed to help people attain, maintain, or regain their optimum level of functioning It includes health maintenance throughout the life span as well as care during acute protracted illness and disability.[1] Long term care facilities provide impatient care for elderly, convalescent and chronic disease patients who require professional nursing care and related medical services. The state currently licenses three levels of long-term nursing beds which are:

- Skilled nursing Beds - in which continous skilled nursing care and related services are furnished twenty-four hours a day.
- Intermediate A & B care beds - in which limited skilled nursing and personal care are furnished. Intermediate B services are supposedly less intensive than Intermediate A.[2]

Currently, Intermediate B beds are being phased out. Although a few facilities still have some licensed, no new Intermediate B beds are being licensed.

Concise definitions of skilled nursing and intermediate care patients are not currently available. The Montana Foundation for Medical Care is currently using Medicare Definitions to classify residents of these facilities. An example of these definitions are presented in Appendix A.

The State of Montana stipulates that the nursing care rendered must be prescribed by, or performed under the general direction of a physician.[3] Facilities with skilled nursing beds must have a full-time registered nurse who is responsible for the supervision of patient care; facilities with only intermediate care beds must have a full-time registered nurse or a licensed practical nurse in charge of the facility's health care service. In facilities where a licensed practical nurse serves as the supervisor of health services, formal consultation with a registered nurse must be provide at least four (4) hours weekly at regular intervals.[4]

In addressing the future need for long-term care beds in Montana, these guidelines will not make separate estimates for skilled and intermediate beds. To be compatible with licensing requirements, it is suggested that the individual facilities can allocate their beds in initial applications and base their analysis of financial feasibility on this allocation. After the review is conducted and the license is awarded, the allocation will be fixed. Changes in the allocation of beds in operating facilities will continue to be subject to review.

These guidelines will not address long-term care facilities in Montan currently operated by the state and federal governments. They are not subject to the same regulations, have restricted admission policies

and do not serve just the local communities in which they are located. These include the Montana Veteran's Home in Columbia Falls, the Montana Home for the Aging in Lewistown, the Eastmont Human Services Center which is under construction in Glendive, and the long term care beds in the VA hospital in Miles City.

## 1.2 GEOGRAPHIC BOUNDARIES

In these guidelines, the county in which the facility is located will be considered its primary service area, Counties not having a long-term facility will be grouped with adjacent counties in accordance with known medical service patterns. It is a policy of the Health Systems Agency that long term care residents should be placed in local facilities to the maximum extent possible.

Patient origin studies conducted by the CHP agencies in 1974 indicate that most of these facilities serve the local communities in which they are located. More recent data shows that this practice has continued. Roughly 80% of the long term admissions in Montana nursing homes during 1976 arose from the county in which the facility is located. Table 1 presents statistics for each subarea for both 1975 and 1976; more detailed data is presented in Appendix B.

## 2.0 BACKGROUND TRENDS

The nursing home industry has grown in response to two national trends. The first is an increase in the number of persons aged 65 and older. This is the group primarily served by long-term facilities in Montana. Patient origin studies conducted by the North Central South Central and Eastern Comprehensive Health Planning Agencies in 1974 indicate that the average age of nursing home residents was between 79 and 81 years and the average length of stay was between 1.9 and 2.8 years.

The number of persons 65 and older is expected to jump 15 percent between 1975 and 1985. The Department of Cummunity Affairs estimated that there were 75,600 persons in this age group in Montana in 1975; they also projected, that by 1985, the number of elderly will be approximately 86,600.

The second trend affecting the nursing home industry is the increased reliance of Medicaid for reimbursement of the long-term care services.

At the present time, between 65% and 69% of the average long-term care facility's revenues in Montana are obtained from Medicaid. The State Medicaid budget has grown from $7,000,000 in 1971 to $21,000,000 in 1976. (Approximately 54% of the Medicaid budget is for nursing home reimbursement)*

Nationally, between 1963 and 1973, the number of beds in nursing care and related facilities more than doubled. Yet, a study by the General Accounting Office found that nursing home costs were not above the average of the other components of the Consumer Price Index

* Based on information supplied by Mr. William Ikard, Chief, Economic Assistance Division, Social & Rehabilitation Service, State of Montan

| SUBAREA | 1975 Adm. | 1975 Same County | 1975 % Same County | 1976 Adm. | 1976 Same County | 1976 % Same County |
|---|---|---|---|---|---|---|
| Northwestern | 906 | 789 | 87.1 | 1,052 | 919 | 87.3 |
| North Central | 456 | 400 | 87.7 | 1,011 | 728 | 72.0 |
| Southwestern | 1,298 | 1,012 | 78.0 | 1,394 | 1,121 | 80.4 |
| South Central | 809 | 607 | 82.4 | 794 | 630 | 79.3 |
| Eastern | 310 | 232 | 74.8 | 502 | 363 | 72.3 |
| TOTAL: | 3,779 | 3,100 | 82.0 | 4,753 | 3,761 | 79.1 |

TABLE 1 - Percent of Long-term Care Facility Admissions arising from the County in which the Facility is located.

SOURCE: Unpublished data for the 1975 and 1976 Annual Reports for Long-Term Care Facilities, Department of Health & Environmental Sciences, State of Montana

Patient origin studies were conducted in three of the subareas by the CHP Agencies. They showed the following information.

| Subarea | Date Study Conducted | Median % Same County | Range % Same County |
|---|---|---|---|
| North Central | Dec. 1974 | 82 % | 18%-100% |
| South Central | March, 1976 | 81.3% | 64.4% - 87.7% |
| Eastern | Jan. 1975 | 80.5% | 14% - 100% |

in three of the states studied (Michigan, California, and Utah).[5] The increased availability of long term care beds has caused a redistribution of the health care dollar. As shown in Figure 1, 1.5 percent of the health care dollar was spent on nursing home care in 1950; by 1960 this increased to 1.9 percent; and in 1974, it was an estimated 7.1 percent.

The nursing home industry has indicated that much of the increase in long-term costs has been a result of complying with regulations. For example, an HEW study shows that two regulations issued in the latter part of 1974 increased nursing home costs $1.40 a day.[6]

Within Montana, a number of things appear to be happening which might bring drastic changes in the state's long-term care delivery system. These include:

- The de-institutionalization of mental patients from state facilities.
- PSRO conducting audits of patients in long-term care facilities.
- Changes in Medicaid reimbursement practice.
- Hospitals jointly administering long-term care facilities.
- Increasing concern over the possibility that Montana may be overbuilding long-term care beds.

About two years ago, the state implemented a policy aimed at reducing the number of patients treated at state institutions. Patients at Warm Springs, the state mental hospital, and Boulder, the state's institution for the retarded, were to be returned to their local communities. It was expected that many of these returnees would be cared for in local nursing homes. It is not known how many former Warm Springs and Boulder patients are currently in private long-term care facilities. Data from the long-term facilities indicate that 174 Warm Springs patients were admitted to local long-term care facilities in 1975 (3.7% of the total admissions) and only 77, in 1976 (2.0% of the total admissions). The number of patients from Boulder was significantly smaller. Recently, the state has notified some facilities that no more of these patients will be transferred. Thus the future impact of deinstitutionalization is expected to be small; however, it should be noted that recent changes in the commitment laws will prevent the less serious mental patients from being sent to state institutions in the first place. They may, however, be placed in a local nursing home.

In July, 1976, the Montana Foundation for Medical Care began screening and classifying long-term nursing residents for the State's Social and Rehabilitation Service. The purpose of their contract was to determine the appropriate category of care needed by these persons. See Appendix A for the general criteria used in classifying these people. Although their findings have not yet been published, it is estimated that between 50 and 70 percent of the residents whose records are reviewed will be downgraded from skilled nursing care to intermediate care. Although the level of care criteria has been changed, the quality and quantity of care has not been affected to date.

Although this document does not address the allocation of these two levels of care within a facility, it is felt that long-term care as it is currently rendered will be changed as a result of this effort. In addition,there appears to be a movement toward placing these people in the least restrictive appropriate environment. Although no data is available, there currently appears to be a shortage of personal care homes, group homes, adult foster care centers and geriatric day care centers. If these facilities are built and become operational, there will be less demand for long-term beds.

Because of the substantial increases in Medicaid budget, the Social and Rehabilitation Service (SRS) has begun instituting changes in their reimbursement policies. In May 1977, they instituted a policy of using Medicare(Title XVIII) funds as first dollar reimbursement.

In many cases, Medicare will finance up to 100 days of extended care for continuation of necessary medical treatment following discharge after a hospital stay of at least three days. Up to this time, there were few long-term care facilities in Montana certified by Medicare. It is speculated that this policy will probably intensify services provided by long-term care facilities and, thus, also increase per diem costs. At the same time, it is hoped that this will also reduce the number of "social days" awarded to hospitalized patients because no appropriate facility is immediately available.

In addition, SRS is investigating the possibility of converting their cost-plus reimbursement policy to a prospective process with incentives for operational efficiency. A prospective payment system determines rates prior to the time services are provided, and is based upon a forecasted budget. If this is instituted and if it does reduce the cost of care, one would predict that nursing home operators will be more hesitant about their expansion plans.

In recent years, many small hospitals have developed combination facilities. In this configuration, the hospital and long-term care facility are run separately, but have a common administrator and share some support services such as dietary and laundry. Proposed Federal Amendments to the Social Security Act if passed, will allow usage of the swing bed concept in which long-term and acute care beds can be used interchangably as needed. At the present time, Medicare and Medicaid reimbursement policies require that these facilities be operated separately. In sparsely populated rural areas, it appears that combination facilities are a reasonable way to economically provide both acute and long-term care services. It also appears that future dependence on this concept however, might increase the costs of long-term care. Currently, 18 of the 25 long-term care facilities receiving the highest per diem reimbursement from Medicaid are non-profit and many of these are combination facilities.[7)]

The fifth trend in long-term care in Montana is a recent concern that the state may be overbuilding long-term beds. In 1973, the state had 56 beds per 1,000 elderly whereas the national average was 51.9[8)] In early 1977, this had increased to 67.4 with another 826 beds approved or under construction. Until early in 1977, the State Department of Health used a formula to estimate bed need

which assured continual growth. In July 1977, they adopted a more restricted formula, and as of November 14, 1977, they declared a 120 day monatorium on future approvals for long-term care facilities. This moratorium will continue until March 14, 1978.

## 3.0 SERVICE GUIDELINES AND CRITERIA

Some of the following guidelines are covered by state licensing and reimbursement regulations and must be complied with in order to operate a long term care facility in Montana. They are restated in this document to emphasize HSA's concern in specific areas.

### 3.1 COSTS

Applications for the construction, addition, or modernization of long-term care beds must be financially feasible. In concert with this general guideline, the following criteria are recommended:

- Proposed construction, expansion, and modernization plans must be compatible with the estimated bed need of the service area. For maximum efficiency, long-term care facilities should be designed to operate at a minimum annual average occupancy rate of 90%.

- The total project cost should be a complete and realistic estimate of all construction costs and related capital expenses. Because construction costs are usually between 65 and 68 percent of total project costs, applicants should provide a detailed breakdown of their total estimates.

- Adequate financing should be available for the proposed capital expenditure.

- The applicant's estimate of start-up costs should be based upon realistic assessment of the resources required to prepare the completed project for initial occupancy, and adequate financial resources should be available to cover these costs. Some sources estimate that start-up costs will be about 2% of the total replacement value of the project. However, this may not always be realistic.

- The projected breakeven point should be based upon a realistic assessment of the proposed project's initial operating deficit, and adequate financial resources should be available to cover this deficit. It has been suggested that a facility's operating deficit between the date of opening and breadeven point will run between 3 and 5 percent of the total project costs.

- Estimated operating costs should accurately reflect the resources required to provide long-term care services.

- Adequate capital should be available to cover the cost of operating the proposed project. The applicant's expectations regarding the "mix" of the anticipated population by source of payment (i.e. Medicare, Medicaid, 3rd Party and Private Pay) should be consistent with either the current experience of existing facilities in the area offering similar services or the past experience of the applicant.

- The individual components of the total project cost should be reaosnable and legitimate expenditures. If the applicant intends to lease, rather than purchase, the facility, the applicant must document 1) why leasing is preferred, and 2) the overall difference in cost between leasing and purchasing.

- All parties and interests having 10 percent or more interest in the project should be clearly identified, and all contractual arrangements for goods and services should be fully documented. All professional fees which are included as part of the total project cost should be explained and justified.

## 3.2 AVAILABILITY AND ACCESSIBILITY

The overall capacity of the long-term care facilities must be equitably distributed and kept in balance with demonstrated local needs of each of the planning areas. To the maximum extent possible, long-term facilities should be built to service the needs of the residents of their respective communities.

## 3.3 CONTINUITY

Because health care needs of the chronically ill and elderly persons will change over a period of time, proposed long-term care facilities should be capable of providing its residents with multiple levels of care. That is, facilities offering both skilled nursing and intermediate care are preferrable over those offering one or the other.

Where community outreach programs are lacking, such as home delivered meals and geriatric day care, long-term care facilities should promote their establishment. If any of these efforts are to be undertaken by a nursing home, it should be coordinated with the local senior citizens group, American Association of Retired Persons, local City/County Health Department, and other groups interested in the problems of the elderly.

## 3.4 ACCEPTABILITY

Residents' rights should be defined in writing, and appropriate steps should be taken to ensure that all staff and residents are aware of, understand, and comply with these rights. Such a statement of patients' rights is an acknowledgement of the fact that patients do have rights and helps clarify the exact nature of these rights. Putting residents' rights in writing therefore helps avoid possible confusion or misunderstanding about what individual persons can expect as residents of the facility.

The administration policies of each facility should ensure the protection of residents' rights to privacy, as well as their right to receive visitors as frequently as they desire. Furthermore, the administrative policies should ensure the protection of residents' financial rights.

Residents should be encouraged to express any grievances which they may have about their care, and every effort should be made to resolve these grievances. (The State Office of Aging is currently

initiating a Nursing Home Ombudsman Program to handle this.)

## 3.5 QUALITY

The director of nursing should be well qualified to fulfill his or her responsibilities in administering the provision of nursing services. Any proposed project should be staffed by an adequate number of appropriately trained nursing personnel. For skilled nursing facilities, minimum staffing levels by number of beds have been established by the State.[9)]

In addition to providing nursing services, the psycho-social needs of long-term care facility residents should receive primary emphasis in future reviews. The quality of life of these residents should be of prime importance. There is a need to shift the orientation of long-term care facilities from a medical model to a more appropriate long-term model. A comparison of these two models is presented in Table 2.

| | Acute Care (Medical) Model | Long Term Model |
|---|---|---|
| Medical needs | Primary | Secondary |
| Social & Related needs | Secondary | Primary |
| Settings for delivery | Hospital | Home, day centers, nursing facilities |
| Success | Number cured or rehabilitated | Actual level of functioning compare to potential level |
| Professional approach | Physician/nurse diagnosis oriented | Team function oriented |
| Problems addressed | Specific and chief complaint oriented | Comprehensive socia health oriented |
| Role of Patient fostered | Regression-dependent type | Independence progression type |

TABLE 2 COMPARISON OF ACUTE CARE (MEDICAL) MODEL AND LONG-TERM MODEL

Source: Weiler, P.G. Cost-effective analysis; a quandary for geriatric health care systems. The Gerontologist, Vol. 14, No. 5, October 1974, pp. 414-417.

## 4.0 DESCRIPTION OF THE PRESENT SITUATION

In 1973, the United States had 51.9 beds/1,000 elderly. At that time, Montana had 56.0 beds/1,000 elderly.[10] In 1976 this ratio had grown to 67.4 beds/1,000 persons aged 65 and older. These beds appear to be fairly equally distributed across the subareas.

Although there are no national standards for the number of long-term beds needed to serve a population of a given size, a number of states have specified target numbers. Texas, for example, is using 80 beds per 1,000 elderly population while Massachusetts is aiming for 63.8 skilled nursing and intermediate care beds to serve the same number of people. (It should be noted that Massachusetts wants to establish 25.8 boarding home beds per 1,000 elderly as well.)

The nursing home industry is currently experiencing tremendous growth in Montana. At the present time, 826 additional skilled nursing and intermediate care beds are either under construction or have received approval. If all of these beds are put into service by 1985 and no others, the projected statewide number of beds per 1,000 population will be 67.8. Eastern Montana will have an estimated ratio of 83.0.

Like the nation as a whole, the majority of long-term care facilities in Montana are operated by proprietary (for profit) organizations. However, in Montana there is a number of nursing homes (28 of the 87) which are operated in conjunction with hospitals. Most of these are small facilities with an average long-term bed complement of 38. Because the concept of combination facilities appears to be one method of delivering both acute and long-term care services to rural areas, much of the following discussion will compare the proprietary facilities with combination hospital-nursing homes.

The average size of nursing homes in Montana is relatively small - 62 beds. Ries and Christenson have pointed out that larger facilities would be more economical to operate in Montana.[13] For example, they have indicated that the optimum (most economical) size of long-term care facilities in Montana would be 122 beds. However, they did not consider the vastness and small population densities of the areas to be served. If long-term care is to be accessible then geography dictates that small facilities be built.

The average cost (expense) per patient day in long-term care facilities in Montana was $19.08 in 1976 up from $17.00 in 1975. Assuming that an average month is 30 days, the State Medicaid program reimbursed an average of $15.42 for a patient day in 1976. (Medicaid requires that patients with some financial resources to pay for some of the care they receive).

As shown in Figure 2, the State's Medicaid estimated annualized expenditures for nursing home (skilled nursing, intermediate high and intermediate low) care for these three years were $13.4, $16.6, and $21.8 million, respectively.

It should be further noted that although the various levels of care (skilled nursing and intermediate) were established as a cost con-

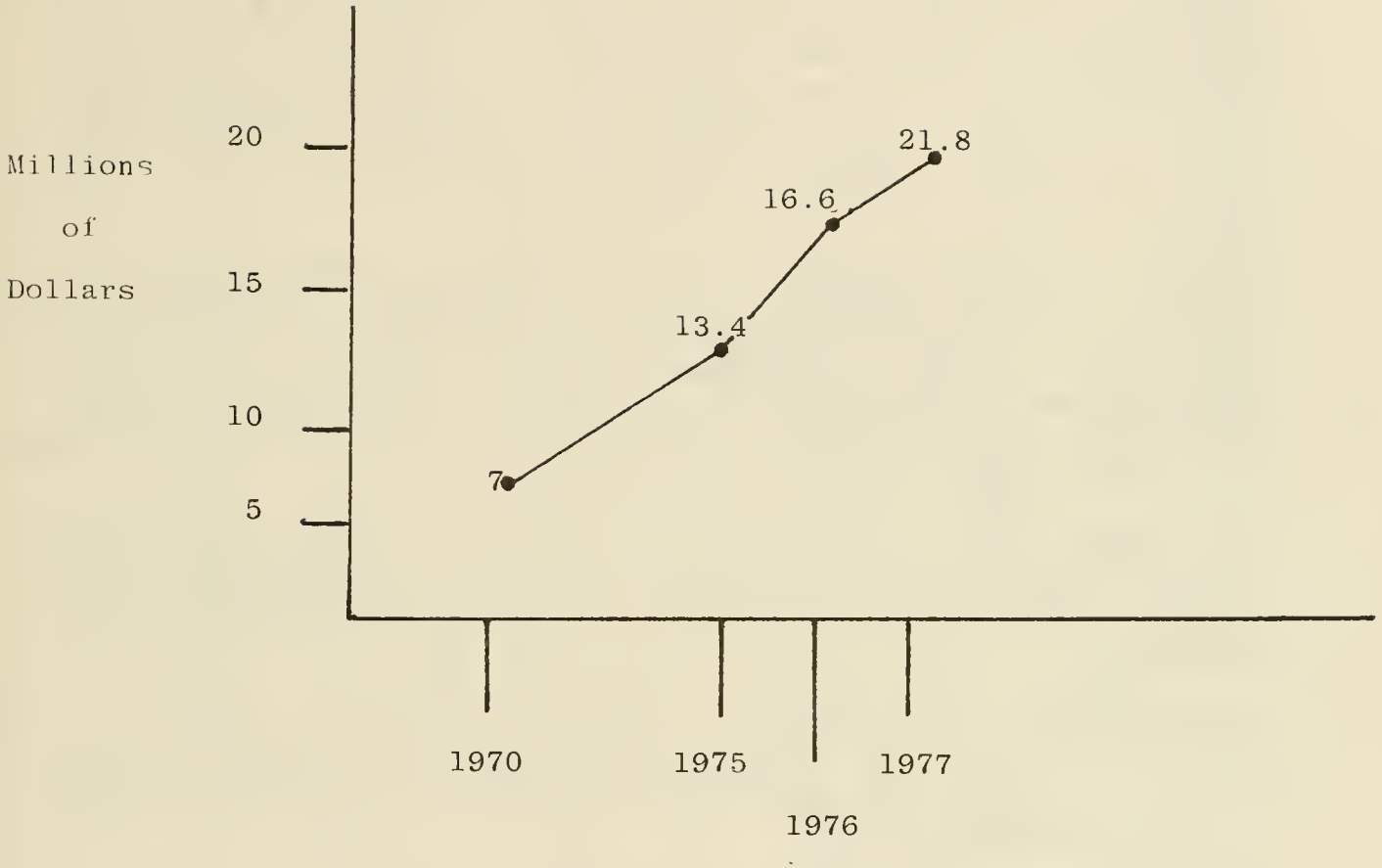



FIGURE 2 - Montana Medicaid's Estimated Annual Expenditures for Long-Term Care Services for Selected Years.

SOURCE: Estimated from Monthly Statistical Tables prepared by the Bureau of Statistics & Research Department of Social and Rehabilitation Services, State of Montana.

tainment measure (at least in the sense that intermediate care patients should be receiving less intensive services than skilled nursing patients) and the Medicaid reimbursement schedule reflects this hierarchy, it appears that the state is paying more per patient day for intermediate care. For the first five months of 1977, Medicaid reimbursed an average per patient day of $15.46 for skilled care and $18.33 for intermediate.* This appears to be a direct result of the PSRO activities reclassifying skilled nursing patients and Medicaid's current reimbursement policy of reimbursing allowable costs. In addition, the estimates include reimbursement to state institutions which apparently are paid more for intermediate care than are private facilities for skilled care.

The cost (expense) per patient day in hospital related facilities is higher than in independent facilities. In 1976 the costs in those nursing homes managed with a hospital was $22.76 . In comparison, the other facilities had costs (expenses) of $18.35 per patient day.** These numbers have serious policy implications. If the HSA and SHPDA were to encourage the development of hospital related long-term care facilities, they would be paying a premium of roughly $1,600 each year for each bed so allocated.***

The average annual occupancy of long-term facilities in this state is between 91 and 92 percent. In 1975 it was 91.1% and in 1972 it was 91.6%. There appears to be no substantial difference between the hospital related and the independent facilities of this statistic.

The geographical distribution of long-term care facilities is illustrated in Figure 3. Of the 58 cities and towns with populations of 1,000 or more, 48 have nursing homes. In addition, there are 11 towns with populations of less than 1,000 which also have a long term care facility.

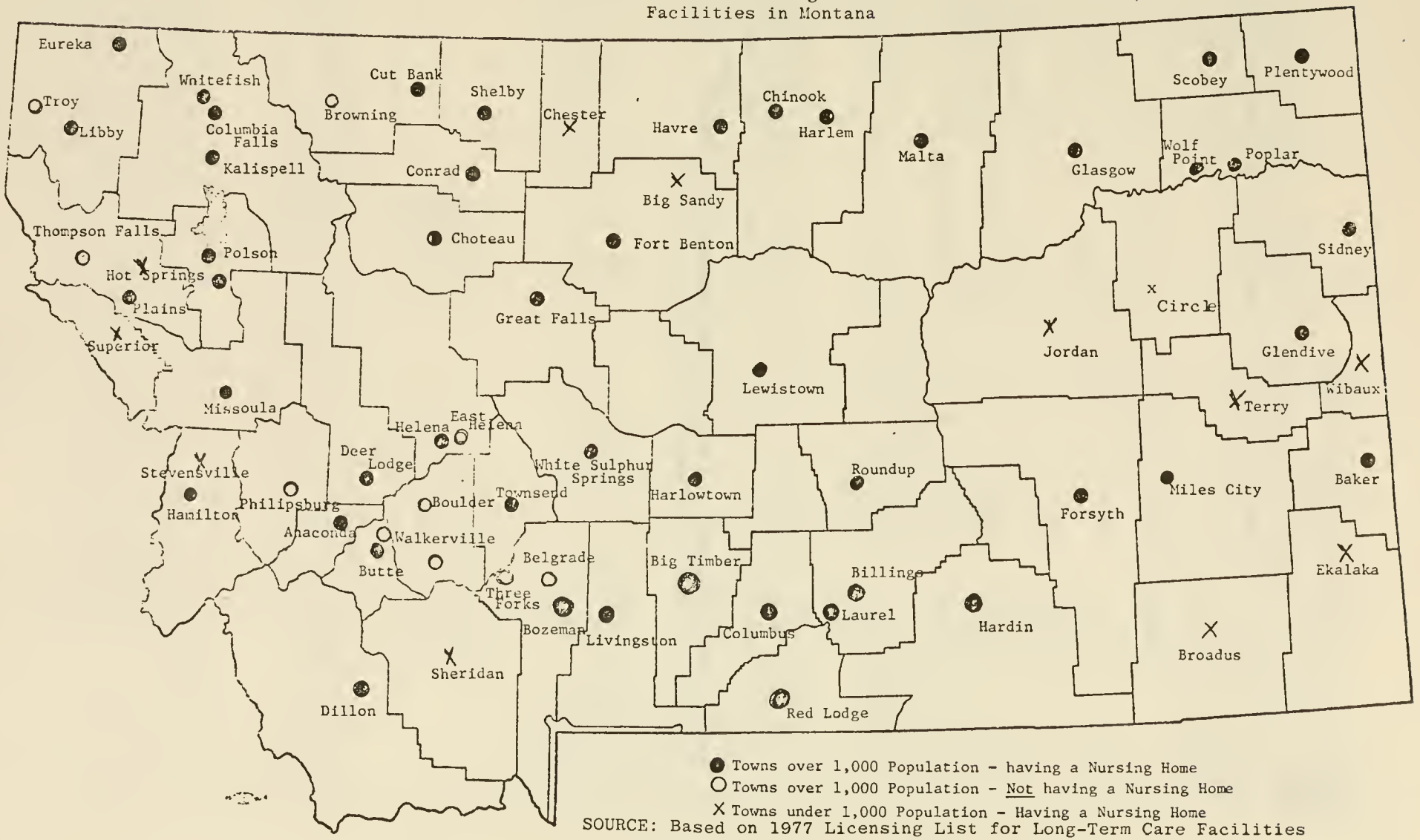
The 1975 Hill-Burton Plan indicates that 1,113 long-term care beds were non-conforming to federal standards and guidelines. About one-third of these (381) were classified as Intermediate "B" beds. Since that time, most of these (248) are no longer licensed. Of the skilled nursing beds which were non-conforming (414), 272, or 65 percent, have been brought up to federal standards. Of the non-conforming intermediate "A" beds (318), 93, or 24 percent are no longer licensed and 58 (18 percent) have been replaced, modernized or received approvals for construction.

* These figures are based upon the monthly statistics generated by the Bureau of Statistics, Department of Social & Rehabilitation Services, State of Montana. It includes payments to <u>both</u> private and state operated facilities.

** These figures where taken from annual reports for long-term facilities. Skilled and intermediate costs cannot be examined separately with this data.

*** The differences may not be as great when further analyses are conducted. The differences indicated here result from two confounding variables - hospital related and independent as well as size (the hospital related facilities are generally smaller).

FIGURE 3 - Location of Long-Term Care Facilities in Montana




● Towns over 1,000 Population - having a Nursing Home
○ Towns over 1,000 Population - Not having a Nursing Home
X Towns under 1,000 Population - Having a Nursing Home

SOURCE: Based on 1977 Licensing List for Long-Term Care Facilities

## 5.0 ESTIMATE OF SERVICE REQUIREMENTS

The extimated number of long-term care beds needed in 1983 in each of the service areas and subarea are shown in Tables 2 through 6. The classical Hill-Burton formula, with minor modifications, was used to obtain these estimates. The formula is expressed in the following equation:

$$\text{Beds needed} = \frac{\frac{PD}{POP\ (76)} \times POP\ (83)}{365 \times 0.90} \qquad (1)$$

where

PD = number of patient days observed in 1976

POP (76) = estimated 1976 population who are 65 and over for the service area.

POP (83) = estimated 1983 population who are 65 and over for the service area.

The factor 0.90 corresponds to a desired overall occupancy rate. It appears that 90 percent occupancy rate is both feasible and desirable. Facilities continually operating at less than this level lose administrative flexibility and have difficulties remaining solvent. Population estimates are based upon projections provided by the Department of Community Affairs. [14]

A comparison of the number of long-term care beds needed versus the number licensed or approved in each service are and subarea is presented in Table 7 through 11. Based on this table, five counties appear to need 40 or more additional long term care beds by 1985. They are:

| | |
|---|---|
| - Flathead County | 57 Beds |
| - Cascade County | 41 Beds |
| - Lewis and Clark County | 60 Beds |
| - Silver Bow County | 60 Beds |
| - Yellowstone County | 100 Beds |

Because most of these are urban areas, and because of the number of beds needed, consideration should be given to building independent facilities if they are found to be necessary. It appears that 40 beds is the smallest size that independent long-term care facilities can and still be financially viable.

It should be noted that the Montana Foundation for Medical Care will have a significant impact on the number of long-term beds needed. They are currently screening the levels of care provided to nursing home residents under a contract for the Social and Rehabilitation Service. It appears that many patients (perhaps as much as 70%) will be reassigned to lower levels of care. Furthermore, the Foundation may also find that some long-term care facility residents

| | AREA | 1975 Pop. Over 65 | 1985 Pop. Over 65 | Patient Days (1976) | Use Rate Per 1,000 Pop. | Projected Average Daily Census | Bed Need |
|---|---|---|---|---|---|---|---|
| R-1 | LINCOLN COUNTY | 1,146 | 1,562 | 21,933 | 19.139 | 81.9 | 91 |
| R-2 | FLATHEAD COUNTY | 4,595 | 5,623 | 119,668 | 26.043 | 401.2 | 446 |
| R-3 | SANDERS COUNTY | 1,074 | 1,158 | 24,497 | 22.497 | 71.4 | 79 |
| R-4 | LAKE COUNTY | 2,335 | 2,512 | 44,716 | 19.150 | 131.8 | 146 |
| R-5 | MINERAL COUNTY | 266 | 306 | 6,292 | 23.654 | 19.8 | 22 |
| R-6 | RAVALLI COUNTY | 2,828 | 3.143 | 55,844 | 19.747 | 170.0 | 189 |
| I-1 | MISSOULA COUNTY | 4,978 | 6,157 | 92,215 | 18.525 | 312.5 | 347 |
| | TOTAL | 17,222 | 20,461 | 364,830 | 22.184 | 1,243.6 | 1,320 |

TABLE 2 - Estimated Bed Need for Long-Term Care Facilities in Northwestern Montana

| | AREA | 1975 Pop. Over 65 | 1985 Pop. Over 65 | Patient Days (1976) | Use Rate Per 1,000 Pop. | Projected Average Daily Census | Bed Need |
|---|---|---|---|---|---|---|---|
| R-7 | GLACIER COUNTY | 916 | 1,147 | 11,909 | 13.001 | 40.9 | 45 |
| R-8 | TOOLE COUNTY | 592 | 635 | 11,051 | 18.667 | 32.5 | 36 |
| R-9 | PONDERA COUNTY | 731 | 813 | 22,134 | 30.279 | 67.4 | 75 |
| R-11 | TETON COUNTY | 801 | 934 | 14,867 | 18.561 | 47.5 | 53 |
| I-2 | (PART) CASCADE COUNTY | 7,250 | 7,701 | 175,053 | 24.145 | 509.4 | 566 |
| I-2 | (PART) CHOUTEAU COUNTY | 761 | 781 | 17,893 | 23.512 | 50.3 | 56 |
| I-3 | (PART) HILL COUNTY | 1,567 | 1,941 | 41,103 | 26.230 | 139.5 | 155 |
| I-3 | (PART) BLAINE COUNTY | 753 | 730 | 35,369 | 46.971 | 93.9 | 104 |
| I-3 | (PART) LIBERTY COUNTY | 218 | 271 | 13,989 | 64.170 | 47.6 | 53 |
| | TOTAL | 13,589 | 14,953 | 343,386 | 25.269 | 1,035.2 | 1,143 |

TABLE 3 - Estimated Bed Need for Long-Term Care Facilities in North Central Montana

| AREA | 1975 Pop. Over 65 | 1985 Pop. Over 65 | Patient Days (1976) | Use Rate Per 1,000 Pop. | Projected Average Daily Census | Bed Need |
|---|---|---|---|---|---|---|
| R-12 (PART) BEAVERHEAD CO. | 890 | 944 | 18,655 | 20.961 | 54.2 | 60 |
| R-12 (PART) MADISON COUNTY | 874 | 839 | 14,157 | 16.198 | 37.2 | 41 |
| R-13 GALLATIN COUNTY | 3,017 | 3,679 | 67,843 | 22.487 | 226.7 | 252 |
| R-17 PARK COUNTY | 1,715 | 1,887 | 31,822 | 18.555 | 95.9 | 107 |
| R-32 and R-31 (PART) GRANITE & DEER LODGE COUNTIES | 2,272 | 2,576 | 24,224 | 10.662 | 75.2 | 84 |
| R-31 (PART) POWELL COUNTY | 694 | 732 | 21,052 | 30.334 | 60.8 | 68 |
| I-4 (PART) LEWIS & CLARK CO. | 3,625 | 4,450 | 91,669 | 25.288 | 308.3 | 343 |
| I-4 (PART) JEFFERSON CO. | 593 | 668 | 24,112 | 40.661 | 74.4 | 83 |
| I-4 (PART) BROADWATER CO. | 338 | 368 | 6,275 | 18.565 | 18.7 | 21 |
| I-4 (PART) MEAGHER COUNTY | 272 | 288 | 4,928 | 18.118 | 14.3 | 16 |
| I-5 SILVER BOW COUNTY | 5,113 | 4,986 | 128,081 | 25.050 | 342.2 | 463 |
| TOTAL | 19,403 | 21,417 | 432,818 | 22.307 | 1,308.9 | 1,538 |

TABLE 4 - Estimated Bed Need for Long-Term Facilities in Southwestern Montana

| | AREA | 1975 Pop. Over 65 | 1985 Pop. Over 65 | Patient Days (1976) | Use Rate Per 1,000 Pop. | Projected Average Daily Census | Bed Need |
|---|---|---|---|---|---|---|---|
| R-14 | FERGUS, PETROLEUM & JUDITH BASIN COUNTIES | 2,414 | 2,561 | 49,238 | 20.397 | 143.1 | 159 |
| R-15 | WHEATLAND & GOLDEN VALLEY COUNTIES | 512 | 507 | 10,997 | 21.479 | 29.8 | 33 |
| R-16 | MUSSELSHELL COUNTY | 648 | 654 | 5,564 | 8.586 | 15.4 | 17 |
| R-18 | (PART) SWEET GRASS COUNTY | 532 | 479 | 17,182 | 32.297 | 42.4 | 47 |
| R-18 | (PART) STILLWATER COUNTY | 744 | 795 | 28,946 | 38.906 | 84.7 | 94 |
| R-19 | CARBON COUNTY | 1,358 | 1,411 | 24,306 | 17.898 | 69.2 | 77 |
| R-20 | BIG HORN COUNTY | 761 | 891 | 18,882 | 24.812 | 60.6 | 67 |
| I-6 | YELLOWSTONE COUNTY | 8,020 | 10,602 | 164,227 | 20.477 | 594.8 | 661 |
| | TOTAL | 14,989 | 17,900 | 319,342 | 21.305 | 1,044.8 | 1,155 |

TABLE 5 - Estimated Bed Need for Long-Term Care Facilities in South Central Montana

| AREA | 1975 Pop. Over 65 | 1985 Pop. Over 65 | Patient Days (1976) | Use Rate Per 1,000 Pop. | Projected Average Daily Census | Bed Need |
|---|---|---|---|---|---|---|
| R-9 PHILLIPS COUNTY | 718 | 741 | 13,099 | 18.244 | 37.0 | 41 |
| R-21 VALLEY COUNTY | 1,043 | 1,141 | 27,484 | 26.351 | 82.4 | 92 |
| R-22 DANIELS COUNTY | 458 | 476 | 9,894 | 21.603 | 28.2 | 31 |
| R-23 SHERIDAN COUNTY | 715 | 805 | 12,403 | 17.347 | 38.3 | 43 |
| R-24 ROOSEVELT COUNTY | 1,005 | 1.144 | 28,651 | 28.508 | 89.4 | 99 |
| R-25 MC CONE & GARFIELD COUNTIES | 459 | 549 | 3,326 | 7.246 | 10.9 | 12 |
| R-26 RICHLAND COUNTY | 1,110 | 1,416 | 29,930 | 26.964 | 104.6 | 116 |
| R-27 (PART) DAWSON COUNTY | 987 | 1,286 | 18,579 | 18.824 | 66.3 | 74 |
| R-27 (PART) WIBAUX COUNTY | 187 | 192 | 9,315 | 49.813 | 26.2 | 29 |
| R-28 ROSEBUD & TREASURE COUNTIES | 1,044 | 1,097 | 15,856 | 15.188 | 45.6 | 51 |
| R-29 & I-9 (PART) POWDER RIVER & CUSTER COUNTIES | 1,694 | 2,005 | 59,970 | 35.401 | 194.5 | 216 |
| I-9 (PART) PRAIRIE COUNTY | 292 | 331 | 4,359 | 14.928 | 13.5 | 15 |
| R-30 (PART) FALLON COUNTY | 403 | 472 | 10,688 | 26.521 | 34.3 | 38 |
| R-30 (PART) CARTER COUNTY | 271 | 259 | 6,070 | 22.399 | 15.9 | 18 |
| TOTAL | 10,386 | 11,914 | 249,624 | 24.035 | 784.5 | 875 |

TABLE 6 - Estimated Bed Need for Long-Term Care Facilities in Eastern Montana

| AREA | Licensed Beds (1977) | Approved Additional Beds (1977) | Beds in Service (1983) | Estimated Need (1983) | Defi[illegible] (Surp[illegible]) |
|---|---|---|---|---|---|
| R-1 LINCOLN COUNTY | 60 | 40 | 100 | 91 | (- 9) |
| R-2 FLATHEAD COUNTY | 339 | 50 | 389 | 446 | [illegible] |
| R-3 SANDERS COUNTY | 68 | 16 | 84 | 79 | (- |
| R-4 LAKE COUNTY | 145 | 40 | 185 | 146 | (-39) |
| R-5 MINERAL COUNTY | 20 | 0 | 20 | 22 | |
| R-6 RAVALLI COUNTY | 155 | 0 | 155 | 189 | 34 |
| I-1 MISSOULA COUNTY | 264 | 50 *1 | 314 | 347 | [illegible] |
| TOTAL | 1051 | 196 | 1247 | 1320 | |

*1. An additional 28 rehabilitation beds have also been approved for Missoula Count[illegible]

| | | No Additions | Estimated Need |
|---|---|---|---|
| | | 1983 | 1983 |
| Bed to Population Ratio | 1977 61.0 | 60.9 | 64.5 |

TABLE 7 - Estimated deficit (surplus) of Long-Term Care Beds in 1983 in Northwestern Montana.

| AREA | Licensed Beds (1977) | Approved Additional Beds (1977) | Beds in Service (1985) | Estimated Need (1985) | Deficit (Surplus) |
|---|---|---|---|---|---|
| R-7 GLACIER COUNTY | 39 | 0 | 39 | 45 | 6 |
| R-8 TOOLE COUNTY | 32 | 26 | 58 | 36 | (-22) |
| R-9 PONDERA COUNTY | 63 | 0 | 63 | 75 | 12 |
| R-11 TETON COUNTY | 41 | 28 | 69 | 53 | (-16) |
| I-2 (PART) CASCADE COUNTY | 525 | 0 | 525 | 566 | 41 |
| I-2 (PART) CHOUTEAU COUNTY | 51 | 20 | 71 | 56 | (-15) |
| I-3 (PART) HILL COUNTY | 120 | 0 | 120 | 155 | 35 |
| I-3 (PART) BLAINE COUNTY | 101 | 6 | 107 | 104 | (- 3) |
| I-3 (PART) LIBERTY COUNTY | 40 | 0 | 40 | 53 | 13 |
| TOTAL | 1,012 | 80 | 1,092 | 1,143 | 51 |

| | 1977 | 1983 (no additions) | 1983 Estimated Need |
|---|---|---|---|
| Beds to Population Ratios | 74.5 | 73.0 | 76.4 |

TABLE 8 - Estimated Deficit (Surplus of Long-term Care Beds in North Central Montana

| AREA | Licensed Beds (1977) | Approved Additional Beds (1977) | Beds in Service (1985) | Estimated Need (1985) | Deficit (Surplu |
|---|---|---|---|---|---|
| R-12 (PART) BEAVERHEAD COUNTY | 54 | 0 | 54 | 60 | 6 |
| R-12 (PART) MADISON COUNTY | 39 | 40 | 79 | 41 | (-38) |
| R-13 GALLATIN COUNTY | 227 | 0 | 227 | 252 | 25 |
| R-17 PARK COUNTY | 125 | 0 | 125 | 107 | (-18) |
| R-32 and R-31 (PART) GRANITE & DEER LODGE COUNTIES | 68 | 21 | 89 | 84 | (- 5) |
| R-31 (PART) POWELL COUNTY | 60 | 0 | 60 | 68 | 8 |
| I-4 (PART) LEWIS & CLARK CO. | 283 | 0 | 283 | 343 | 60 |
| I-4 (PART) JEFFERSON COUNTY | 67 | 0 | 67 | 83 | 16 |
| I-4 (PART) BROADWATER COUNTY | 18 | 0 | 18 | 21 | 3 |
| I-4 (PART) MEAGHER COUNTY | 11 | 23 | 34 | 16 | (-18) |
| I-5 SILVER BOW COUNTY | 403 | 0 | 403 | 463 | 60 |
| TOTAL | 1,345 | 84 | 1,439 | 1,538 | 99 |

| | 1977 | 1985 (no additional) | 1983 Estimated Need |
|---|---|---|---|
| Beds to Population Ratios | 69.3 | 65.1 | 69.6 |

TABLE 9 - Estimated Deficit (surplus) on Long-Term Beds in 1983 in Southwestern Montana

| | AREA | Licensed Beds (1977) | Approved Additional Beds (1977) | Beds in Service (1985) | Estimated Need (1983) | Deficit (Surplus |
|---|---|---|---|---|---|---|
| R-14 | FERGUS, PETROLEUM & JUDITH BASIN COUNTIES | 147 | 30 | 177 | 159 | (-18) |
| R-15 | WHEATLAND & GOLDEN VALLEY COUNTIES | 31 | 0 | 31 | 33 | 2 |
| R-16 | MUSSELSHELL COUNTY | 18 | 0 | 18 | 17 | (- 1) |
| R-18 | (PART) SWEETGRASS COUNTY | 48 | 0 | 48 | 47 | (- 1) |
| R-18 | (PART) STILLWATER COUNTY | 81 | 0 | 81 | 94 | 13 |
| R-19 | CARBON COUNTY | 104 | 0 | 104 | 77 | (-27) |
| R-20 | BIG HORN COUNTY | 56 | 33 | 89 | 67 | (-22 |
| I-6 | YELLOWSTONE COUNTY | 521 | 40 | 561 | 661 | 100 |
| | TOTAL | 1006 | 103 | 1109 | 1155 | 46 |

| Bed to Population Ratios | 1977 | 1985 | Estimated Need 1985 |
|---|---|---|---|
| | 67.1 | 61.9 | 64.5 |

TABLE 10 - Estimated Deficit (Surplus) of Long Term Care Beds in 1983 in South Central Montana

| AREA | Licensed Beds (1977) | Approved Additional Beds (1977) | Beds in Service (1985) | Estimated Need (1985) | Deficit (Surplus) |
|---|---|---|---|---|---|
| R-9 PHILLIPS COUNTY | 38 *1 | 60 | 60 | 41 | (-19) |
| R-21 VALLEY COUNTY | 90 | 0 | 90 | 92 | |
| R-22 DANIELS COUNTY | 28 | 27 | 55 | 31 | (-24) |
| R-23 SHERIDAN COUNTY | 37 | 0 | 37 | 43 | 6 |
| R-24 ROOSEVELT COUNTY | 81 | 72 | 153 | 99 | (- |
| R-25 MC CONE & GARFIELD COUNTIES | 12 | 40 | 52 | 12 | (-40) |
| R-26 RICHLAND COUNTY | 85 | 0 | 85 | 116 | |
| R-27 (PART) DAWSON COUNTY | 59 | 26 *2 | 85 | 74 | (-11) |
| R-27 (PART) WIBAUX COUNTY | 40 | 0 | 40 | 29 | (-11) |
| R-28 ROSEBUD & TREASURE COUNTIES | 39 | 0 | 39 | 51 | |
| R-29 & I-9 (PART) POWDER RIVER & CUSTER COUNTIES | 188 | 40 | 228 | 216 | (- |
| I-9 (PART) PRAIRIE COUNTY | 12 | 0 | 12 | 15 | 3 |
| R-30 (PART) FALLON COUNTY | 32 | 0 | 32 | 38 | |
| R-30 (PART) CARTER COUNTY | 21 | 0 | 21 | 18 | (- 3) |
| TOTAL | 762 | 265 | 989 | 875 | (-114) |

*1. The current facility in Philips County will be closed when the new facility becomes operational

*2. Department of Institutions (State of Montana) are also building an additional 40 long term care beds in Glendive.

| | 1977 | 1985 (no addition) | 1983 Estimated Need |
|---|---|---|---|
| Beds to Population Ratios | 73.3 | 83.0 | 73.4 |

TABLE II - Estimated Deficit (Surplus) of Long-Term Care Beds in 1988 in Eastern Montana

do not need the types of nursing care provided in these institutions. Instead, less restrictive accommodations may be more appropriate. Thus, before additional construction of long-term care facilities in these counties is approved, it is recommended that the availability of alternative sources of care (retirement homes, senior citizen apartments, personal care homes, group homes, adult foster care programs, geriatric day care centers and home health care agencies) be carefully investigated. Emphasis should be placed on developing these less restrictive types of health care programs where possible. This would and should include relicensing long term care beds to a more appropriate level.

Six other counties appear to need between 15 and 40 beds by 1985. They are:

- Pavalli County 34 Beds
- Missoula County 33 Beds
- Gallatin County 25 Beds
- Jefferson County 16 Beds
- Hill County 35 Beds
- Richland County 31 Beds

Because free standing facilities of less than 40 beds are probably impractical and uneconomical, preference should be given to applicants in these areas wishing to expand or develop combination hospital/long term care facilities. Again, the availability and feasibility of developing alternatives to long-term care facilities should be carefully studied before any further construction is approved by reviewing agencies.

A number of counties are beginning to show a surplus of nursing home beds. Most of these appear to be a result of new construction or recent Certificate of Need approvals. However, the following areas appear to have a definite surplus:

- Park County 18 Beds
- Carbon County 27 Beds
- Wibaux County 11 Beds

Finally, it also appears that Eastern Montana will have a surplus of long-term beds when all the ones currently approved have been consturcted. In 1983, they will have 83.0 beds per 1,000 persons aged 65 and older.

## References


1) American Academy of Nursing, Position Paper of Long Term Care, April 1976.

2) Montana Administrative Code 16-2.22 (1)-5-2220, Long Term Care Facilities, Licensing and Certification, Undated.

3) Ibid.

4) Ibid.

5) Letter from Dr. Thomas G. Bell, Executive Vice President of the American Health Care Association to Member Facilities, February 22, 1977.

6) Ibid.

7) Discussion Draft to the Legislative Finance Committee from Curtis M. Nichols, Senior Fiscal Analyst, Office of the Legislative Fiscal Analyst, Subject: Proposed Nursing Home Reimbursement System, November 15, 1977.

8) U.S. Department of Health, Education and Welfare, Public Health Service, Health Resources Administration, National Center for Health Statistics, Health Resources Statistics, Health Manpower and Health Facilities, 1976 Published 1976.

9) Montana Licensing Law & Regulations for Long-Term Care Facilities. Montana State Department of Health, Helena, Montana. Revised, Novemeber 1969, March 1970, May 1971.

10) U.S. Department of Health, Education and Welfare, op cit.

11) Reference Manual for Project Review Standards and Criteria, Tulane University School of Public Health and Tropical Medicine, January 7, 1974.

11) Interagency Task Force: Massachusetts Department of Public Health and the HSAS, Proposed Interim Standards and Criteria for the Allocation of Long Term Beds, November 1, 1976.

13) Bernard Ries & J. B. Christenson, Nursing Home Costs in Montana: Analysis & Policy Applications, Unpublished Staff Paper in Economics; Agricultrue Economics and Economic Department, Montana State University, Bozeman.

14) Montana Department of Community Affairs, Division of Research and Information Systems, Montana Populations Projections 1975-2000, Helena, 1977.

## Appendix A

Definitions used by the Montana Foundation for Medical Care in making level of care determinations for residents of Long Term Care Facilities

MTFMC distinguishes the follwoing levels of care:

I. Acute Care:

Acute Care is care which is given for the treatment of a Medical condition that requires:

A. Immediate availability of diagnostic and/or therapeutic services with equipment.

B. Continued availability of medical supervision and/or other consulting medical staff.

C. Continued availability of licensed nursing personnel.

II. Long Term Care:

Long term care patients may require a combination of skilled and non-skilled services. Level of care of the long term care patient is not based on diagnosis or severity of medical conditions but on the type of care and frequency of treatment required. The two basic considerations are:

1. The individual patients medical needs.

2. The specific services required to fulfill these needs.

A. Skilled Nursing Care:
Skilled nursing care is the care given to a patient under direct supervision of licensed nursing personnel and under the general direction of a physician to achieve medically desired results or to assure the safety of the patient. Skilled nursing care must be distinguished from supportive care. "The observation and assessment of the total needs of the patient and the rendering of direct services on a 24-hour basis, where the ability to provide the services requires specialized training of an RN or an LPN, must be kept in mind."

1. Since skilled nursing care represents skilled services on a continuous basis, the need for a single skilled service -- e.g.,IM injection twice a week would rarely by itself justify a decision that skilled nursing care is needed.

2. The classification of particular service as skilled is based on the technical or professional health training required to effectively perform or supervise the service.

3. The importance of a particular service to an individual patient does not necessarily make it a skilled service, e.g., a primary need of a non-ambulatory patient may be frequent changes of position in order to avoid development of decubiti. If changing the patient's position is the only regular and frequent service provided, it would not be a skilled service.

4. The possibility of adverse effect from improper performance of an otherwise unskilled service, e.g., improper transfer of patients from bed to wheelchair, does not change it to a skilled service.

B. Intermediate Care:
Intermediate care is the care given to a patient to maintain a stable medical state by meeting his needs of daily living. Intermediate care patients may be provided with some skilled nursing services, but these services are not required on a 24 hr. basis.

1. The determining factor as to whether intermediate level care is required is the type of care required, not primarily the amount of care.

APPENDIX B

PATIENT ORIGIN DATA

BY

LONG-TERM CARE FACILITY FOR

1975 and 1976

| COUNTY & FACILITY | 1975 Admissions | 1975 Same Co. | 1975 % | 1976 Admissions | 1976 Same Co. | 1976 % |
|---|---|---|---|---|---|---|
| LINCOLN | | | | | | |
| Libby Conv. Center | 62 | 56 | 90.3% | 47 | 43 | 91.5% |
| FLATHEAD | | | | | | |
| Flathead County Nurs.Home | 55 | 55 | 100 % | 75 | 74 | 98.7% |
| Immanual Lutheran Home | 18 | 16 | 88.9% | 15 | 14 | 93.3% |
| Kalispell Conv. Center | ----- | ---- | ----- | ----- | ----- | ----- |
| Colonial Manor Nurs. Home | ----- | ----- | ----- | 53 | 46 | 86.8% |
| Montana Vet. Home | ----- | ----- | ----- | 23 | 11 | 47.8% |
| North Valley Hospital & Extended Care Center | | | | | | |
| Big Fork Convalescent | 12 | 12 | 100% | 71 | 64 | 90.1% |
| SANDERS | | | | | | |
| Mountain View Sen. Citizen | | | | | | |
| Hot Springs Convalescent | 38 | 30 | 79% | 14 | 6 | 42.9% |
| Clark Fork Valley | 12 | 12 | 100% | 22 | 22 | 100 % |
| Blue Sky Personal Care | | | | | | |
| LAKE | | | | | | |
| St. Joseph Conv. Center | 167 | 152 | 91% | 130 | 117 | 90% |
| Happy Acres Rest Home | 1 | ----- | ----- | 1 | ------- | ----- |
| Mrs. Finley's Home | ----- | ----- | ----- | ----- | ----- | ----- |
| West Side Rest Home | 10 | 10 | 100% | 6 | 6 | 100% |
| Whispering Pines Lodge Home | ----- | ----- | ----- | ----- | ----- | ----- |
| Ingraham's Home | ----- | ----- | ----- | ------ | ----- | ----- |
| MINERAL | | | | | | |
| Mineral County Nurs. Home | 11 | 7 | 63.6% | 45 | 35 | 77.8% |
| RAVALLI | | | | | | |
| Valley View Estates, Inc. | 47 | 44 | 93.6% | 45 | 35 | 77.8% |
| North Valley Nurs. Home | 35 | 23 | 65.7% | 19 | 12 | 63.2% |
| MISSOULA | | | | | | |
| Hillside Manor | 110 | 106 | 96.4% | 207 | 200 | 96.6% |
| Royal Manor | 50 | 41 | 82 % | 58 | 50 | 86.2% |
| Wayside | 68 | 51 | 75 % | 102 | 86 | 84.3% |
| Community | 93 | 70 | 75.3% | 119 | 98 | 82.4% |
| TOTAL: | 906 | 789 | 87.1% | 1052 | 919 | 87.3% |

TABLE B-1

Estimated number of in-County admissions for 1975 and 1976 for Long Term Care Facilities in Northwestern Montana.

| COUNTY & FACILITY | 1975 ADMISSIONS | 1975 SAME COUNTY | 1975 % | 1976 ADMISSIONS | 1976 SAME COUNTY | 1976 % |
|---|---|---|---|---|---|---|
| GLACIER | | | | | | |
| Memorial Nursing Home | ----- | ----- | ----- | ----- | ----- | |
| TOOLE | | | | | | |
| Shelby Rest Home | ----- | ----- | ----- | ----- | ----- | |
| Stewart Rest Home | ----- | ----- | ----- | ----- | ----- | |
| Toole County Nursing Home | 13 | 13 | 100% | ----- | ----- | |
| PONDERA | | | | | | |
| Pondera Pioneer Nurs.Home | 67 | 63 | 94% | 80 | 69 | 86.3% |
| TETON | | | | | | |
| Teton Nursing Home | 11 | 11 | 100% | 13 | 13 | 100% |
| CHOTEAU | | | | | | |
| Sande Convalescent Home | 9 | 6 | 66.7% | 6 | 1 | 16.7% |
| Heritage Home | ----- | ----- | ----- | ----- | ----- | ----- |
| Choteau County Dist. Hosp. | 4 | 4 | 100% | ----- | ----- | ----- |
| CASCADE | | | | | | |
| Cascade County Convalescent Nursing Home | 234 | 218 | 93.2% | 216 | 204 | 94.4% |
| McAuley Nursing Home | 17 | 15 | 88.2% | 12 | 5 | 41.7% |
| Deaconess Skilled Nursing Center | 107 | ----- | ----- | 157 | 133 | 84.7% |
| Park Place Nursing Home | ----- | ----- | ----- | 291 | 218 | 74.8% |
| LIBERTY | | | | | | |
| Liberty County Nursing Home | 10 | 6 | 60% | 49 | ----- | ----- |
| BLAINE | | | | | | |
| Sweet Memorial Nurs. Home | 20 | 18 | 90% | 21 | 20 | 95.2% |
| Harlem Rest Home | 35 | 20 | 57.1% | 30 | 13 | 43.3% |
| HILL | | | | | | |
| Hi-Line Home | 6 | 4 | 66.7% | 9 | 4 | 44.4% |
| Lutheran Home of the Good Shepherd | 30 | 22 | 73.3% | 76 | 48 | 63.2% |
| TOTAL: | 563 | 400 | 71% | 1011 | 725 | 72% |

TABLE B-2

Estimated number of in-County admissions for 1975 and 1976 for Long Term Care Facilities in North Central Montana.

| COUNTY & FACILITY | 1975 TOTAL ADMISSIONS | 1975 SAME COUNTY | 1975 % SAME COUNTY | 1976 TOTAL ADMISSIONS | 1976 SAME COUNTY | 1976 % SAME COUNTY |
|---|---|---|---|---|---|---|
| BEAVERHEAD | | | | | | |
| Parkview Acres Conv. & Nursing Home, Inc. | 60 | 37 | 61.7 | 44 | 28 | 63.6 |
| MADISON | | | | | | |
| Madison Co. N.H. | 13 | 13 | 100 | 10 | 10 | 100 |
| GALLATIN | | | | | | |
| Bozeman Deaconess Hosp. | 101 | 93 | 92 | --- | --- | --- |
| Bozeman Conv. Center | 8 | 5 | 62.5 | 169 | 110 | 65 |
| Gallatin Co. Rest Home | 17 | 15 | 88.2 | 27 | 26 | 96.3 |
| Millcrest Health Center | 24 | 18 | 75 | 20 | 20 | 100 |
| Three Forks N.H. | --- | --- | --- | --- | --- | --- |
| JEFFERSON | | | | | | |
| Hillbrook N.H. | 26 | 5 | 19.2 | 46 | 38 | 82.6 |
| LEWIS & CLARK | | | | | | |
| Helena Nursing Home & Health Facilities, Inc | 135 | 132 | 98 | 98 | 96 | 98 |
| Cooney Conv. Home | 66 | 66 | 100 | 93 | 93 | 100 |
| Parkside Manor | 34 | 11 | 32.4 | 29 | 7 | 24.1 |
| Western Care N.H. | 64 | 37 | 57.8 | 55 | 32 | 58.2 |
| BROADWATER | | | | | | |
| Broadwater Co. Rest H. | 8 | 8 | 100 | 19 | 19 | 100 |
| MEAGHER | | | | | | |
| Mountainview Mem. N.H. | 6 | 5 | 83.3 | 8 | 6 | 75 |
| POWELL | | | | | | |
| Colonial Manor of Deer Lodge | 62 | 21 | 33.9 | 53 | 35 | 66 |
| DEER LODGE | | | | | | |
| Community N.H. of Anaconda | 45 | 40 | 88.9 | 53 | 47 | 88.7 |
| SILVER BOW | | | | | | |
| Crest Nursing Home | 94 | 82 | 87.2 | 98 | 79 | 80.6 |
| Butte Park Royal Conv. Ctr. | 145 | 95 | 65.5 | 324 | 250 | 77.2 |
| Silver Bow General N.H. | 260 | 209 | 80.4 | 89 | 89 | 100 |
| PARK | | | | | | |
| Livingston Conv. Center | 130 | 120 | 92.3 | 159 | 136 | 85.5 |
| TOTALS: | 1298 | 1012 | 78 | 1394 | 1121 | 80.4 |

TABLE B-3

Estimated number of in-County admissions for 1975 and 1976 for Long Term Care Facilities in Southwestern Montana.

| COUNTY & FACILITY | 1975 TOTAL ADMISSIONS | 1975 SAME COUNTY | 1975 % SAME COUNTY | 1976 TOTAL ADMISSIONS | 1976 SAME COUNTY | 1976 % SAME COUNTY |
|---|---|---|---|---|---|---|
| FERGUS | | | | | | |
| Valle Vista Manor | 32 | 25 | 78.1 | 58 | 48 | 82.8 |
| Central Mt. Hosp. N.H. | 34 | 33 | 97 | --- | --- | --- |
| Mt. Center for Aged | 38 | --- | --- | 26 | --- | --- |
| WHEATLAND | | | | | | |
| Wheatland Mem. N.H. | 25 | 15 | 60 | 27 | 17 | 63 |
| MUSSELSHELL | | | | | | |
| Roundup Mem. N.H. | 20 | 18 | 90 | 13 | 12 | 92.3 |
| STILLWATER | | | | | | |
| Stillwater Conv. Center | 125 | 85 | 68 | 32 | 22 | 68.8 |
| SWEETGRASS | | | | | | |
| Pioneer Nursing Home | 20 | 17 | 85 | 16 | 14 | 87.5 |
| CARBON | | | | | | |
| Mountain Home | --- | --- | --- | --- | --- | --- |
| Carbon County Mem. N.H. | 27 | 27 | 100 | --- | --- | --- |
| Carbon Co. Health Care Ctr. | --- | --- | --- | --- | --- | --- |
| BIG HORN | | | | | | |
| Big Horn Co. Mem. N.H. | 50 | 44 | 88 | 48 | 37 | 77 |
| Mtn. View Rest Haven | 27 | 11 | 40.7 | 10 | 5 | 50 |
| YELLOWSTONE | | | | | | |
| Glendeen N.H. | 21 | 21 | 100 | 25 | 25 | 100 |
| St. John's Lutheran Hm. | 26 | 26 | 100 | 131 | 96 | 73.3 |
| Valley N.H. | 133 | 111 | 83.5 | 80 | 66 | 83 |
| Western Manor N.H. | 208 | 187 | 89.9 | 263 | 228 | 86.7 |
| Yellowstone Co. N.H. | 39 | 31 | 79.5 | 41 | 36 | 87.8 |
| Laurel N.H. | 18 | 16 | 88.9 | 24 | 24 | 100 |
| TOTALS: | 843 | 667 | 79.1 | 794 | 630 | 79.3 |

TABLE B-4

Estimated number of in-County admissions for 1975 and 1976 for Long Term Care Facilities in South Central Montana

| COUNTY & FACILITY | 1975 TOTAL ADMISSIONS | 1975 SAME COUNTY | 1975 & SAME COUNTY | 1976 TOTAL ADMISSIONS | 1976 SAME COUNTY | 1976 & SAME COUNTY |
|---|---|---|---|---|---|---|
| VALLEY | | | | | | |
| Frances Mahon Dea. Hosp | --- | --- | --- | --- | --- | --- |
| Valley View N.H. | --- | --- | --- | 63 | 28 | 44.4 |
| DANIELS | | | | | | |
| Daniels Mem. N.H. | 4 | 4 | 100 | 8 | 8 | 100 |
| SHERIDAN | | | | | | |
| Sheridan Mem. Hosp. | 33 | 31 | 94 | 18 | 17 | 94.4 |
| ROOSEVELT | | | | | | |
| Community Hosp. N.H. | 45 | 41 | 91.1 | 40 | 40 | 100 |
| Faith Lutheran Ret. Hm. | --- | --- | --- | 19 | 12 | 63.2 |
| GARFIELD | | | | | | |
| Garfield Co. Hospital | 5 | 5 | 100 | --- | --- | --- |
| RICHLAND | | | | | | |
| Richland Homes | --- | --- | --- | 35 | 31 | 88.6 |
| DAWSON | | | | | | |
| Glendive Com. N.H. | 14 | 12 | 85.7 | 27 | 24 | 88.9 |
| ROSEBUD | | | | | | |
| Rosebud Com. N.H. | 21 | 18 | 85.7 | 23 | 23 | 100 |
| FALLON | | | | | | |
| Fallon Mem. N.H. | 37 | --- | --- | 31 | 27 | 87 |
| CARTER | | | | | | |
| Dahl Mem. N.H. | 27 | --- | --- | 31 | 31 | 100 |
| CUSTER | | | | | | |
| Custer Co. Rest Home | 70 | 62 | 88.6 | 92 | 71 | 77.2 |
| Friendship Villa of Miles City, Inc. | 64 | 28 | 43.8 | 53 | 16 | 30.1 |
| PRAIRIE | | | | | | |
| Prairie Com. N.H. | 7 | 7 | 100 | 8 | 8 | 100 |
| WIBAUX | | | | | | |
| Wibaux Co. N.H. | 31 | 12 | 38.7 | 33 | 12 | 36.4 |
| PHILLIPS | | | | | | |
| Malta Hospital | --- | --- | --- | --- | --- | --- |
| Malta N.H. | 16 | 12 | 75 | 21 | 15 | 71.4 |
| TOTALS: | 374 | 232 | 62 | 502 | 363 | 72.3 |

TABLE B-5

Estimated number of in-County admissions for 1975 and 1976 for Long Term Care Facilities in Eastern Montana.

# APPENDIX C

## ESTIMATED COST (EXPENSES) PER DAY FOR LONG TERM CARE FACILITIES IN MONTANA FOR 1975 and 1976

| SUBAREA | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COSTS |
|---|---|---|---|---|---|---|
| ALL LONG TERM CARE FACILITIES | | | | | | |
| Northwestern | 4,278,019 | 263,116 | 16.26 | 5,227,179 | 286,369 | 18.25 |
| North Central | 5,593,537 | 276,129 | 20.26 | 6,336,099 | 273,874 | 23.14 |
| Southwestern | 5,230,394 | 299,944 | 17.44 | 6,293,865 | 347,535 | 18.11 |
| South Central | 3,706,197 | 229,448 | 16.15 | 4,068,181 | 217,143 | 18.74 |
| Eastern | 2,402,273 | 135,999 | 17.66 | 3,811,100 | 222,841 | 17.10 |
| TOTALS | 21,210,420 | 1,204,636 | 17.60 | 25,735,424 | 1,347,762 | 19.09 |
| HOSPITAL RELATED FACILITIES | | | | | | |
| Northwestern | 359,635 | 10,651 | 33.76 | 763,679 | 34,071 | 22.41 |
| North Central | 985,614 | 45,977 | 21.44 | 1,247,828 | 44,074 | 28.31 |
| Southwestern | 906,449 | 45,387 | 19.97 | 858,550 | 59,734 | 14.37 |
| South Central | 626,065 | 35,789 | 17.49 | 1,016,770 | 49,169 | 20.68 |
| Eastern | 1,520,871 | 86,975 | 17.49 | 2,075,627 | 78,715 | 26.37 |
| TOTALS | 4,398,634 | 224,779 | 19.56 | 5,962,454 | 265,763 | 22.44 |
| INDEPENDENT FACILITIES | | | | | | |
| Northwestern | 3,918,384 | 252,465 | 15.52 | 4,463,500 | 252,298 | 17.69 |
| North Central | 4,607,923 | 230,152 | 20.02 | 5,088,271 | 229,800 | 22.14 |
| Southwestern | 4,323,945 | 254,557 | 16.99 | 5,434,315 | 387,801 | 18.88 |
| South Central | 3,080,132 | 193,659 | 15.90 | 3,051,411 | 167,974 | 18.17 |
| Eastern | 881,402 | 49,024 | 17.98 | 1,735,473 | 144,126 | 12.04 |
| TOTALS | 17,791,643 | 979,857 | 18.15 | 19,772,970 | 1,121,999 | 17.62 |

TABLE C-1 Estimated Cost (Expense)
tient Day In Montana Long Term Care Facilities for 1975 and 1976

| COUNTY & FACILITY | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COST/DAY |
|---|---|---|---|---|---|---|
| LINCOLN | | | | | | |
| Libby Conv. Center | 287,657 | 20,031 | 14.36 | ----- | ----- | ----- |
| FLATHEAD | | | | | | |
| Flathead County Nursing Home | 435,919 | 22,657 | 19.24 | 476,597 | 23,056 | 20.67 |
| Immanual Lutheran Home | 397,379 | 31,915 | 12.45 | 475,504 | 32,386 | 14.68 |
| Colonial Manor Nurs.Home | ----- | ----- | ----- | 418,740 | 20,494 | 20.43 |
| North Valley Hospital & Ext. Care Center * | 236,907 | 7,056 | 33.57 | ----- | ----- | ----- |
| Big Fork Convalescent | ----- | ----- | ----- | 408,088 | 23,770 | 17.17 |
| SANDERS | | | | | | |
| Hot Springs Convalescent | 303,538 | 19,789 | 15.34 | 323,309 | 20,153 | 16.04 |
| Clark Fork Valley * | 122,728 | 3,595 | 34.14 | 117,862 | 4,009 | 29.40 |
| LAKE | | | | | | |
| St. Joseph Conv. Center | 556,295 | 35,010 | 15.89 | 592.006 | 32,925 | 17.98 |
| Happy Acres Rest Home | 49,871 | 3,339 | 14.94 | 46,598 | 3,426 | 13.60 |
| West Side Rest Home | 70,275 | 8,259 | 17.00 | 114,963 | 8,365 | 13.74 |
| MINERAL | | | | | | |
| Mineral Co. Nurs. Home * | ----- | ----- | ----- | 237,729 | 6,292 | 37.78 |
| RAVALLI | | | | | | |
| Valley View Estates,Inc. | 512,917 | 34,907 | 14.69 | 576,485 | 35,097 | 16.43 |
| North Valley Nurs.Home | 359,197 | 20.279 | 17.71 | 399,561 | 20,747 | 19.26 |
| MISSOULA | | | | | | |
| Hillside Manor | 636,336 | 38,040 | 16.73 | 704,818 | 37,379 | 18.86 |
| Royal Manor | 309,000 | 18,239 | 16.94 | 334,919 | 18,270 | 18.33 |
| Wayside | ----- | ----- | ----- | ----- | ----- | ----- |
| Community | ----- | ----- | ----- | ----- | ----- | ----- |
| TOTALS: | 4278,019 | 263,116 | 16.26 | 5227,179 | 286,369 | 18.25 |

*Combination Facilities

TABLE C-2

Estimated cost (Expense) per patient day in Northwestern Montana Long Term Care Facilities (1975 & 1976)

| COUNTY & FACILITY | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COST/DAY |
|---|---|---|---|---|---|---|
| GLACIER | | | | | | |
| Memorial Nursing Home * | ----- | ----- | ----- | ----- | ----- | ----- |
| Blackfeet N.H. | ----- | ----- | ----- | ----- | ----- | ----- |
| TOOLE | | | | | | |
| Toole County N.H. * | ----- | ----- | ----- | ----- | ----- | ----- |
| PONDERA | | | | | | |
| Pondera Pioneer N.H. | ----- | ----- | ----- | ----- | ----- | ----- |
| TETON | | | | | | |
| Teton Nursing Home | 273,705 | 14,788 | 18.51 | 305,383 | 14,867 | 20.53 |
| CHOTEAU | | | | | | |
| Sande Convalescent Home | 127,433 | 10,076 | 12.65 | ----- | ----- | ----- |
| Choteau County Dist. Hos | * ----- | ----- | ----- | ----- | ----- | ----- |
| CASCADE | | | | | | |
| Cascade Co. Conv. N.H. | 2 081,170 | 80,533 | 25.84 | 2,209,966 | 80,791 | 27.35 |
| McAuley N.H. | 207,217 | 14,417 | 14.37 | 239,364 | 15,024 | 15.93 |
| Deaconess Skilled N.C.* | 648,483 | 31,318 | 20.71 | 871,954 | 30,085 | 28.98 |
| Park Place N.H. | 869,994 | 41,531 | 20.95 | 1,134,594 | 49,153 | 23.08 |
| LIBERTY | | | | | | |
| Liberty County N.H. * | 337,131 | 14,659 | 22.99 | 375,874 | 13,989 | 26.87 |
| BLAINE | | | | | | |
| Sweet Memorial N.H. | 181,647 | 11,852 | 15.33 | 240,524 | 12,066 | 19.93 |
| Harlem Rest Home | 251,560 | 23,591 | 10.66 | 277,443 | 23,303 | 11.91 |
| HILL | | | | | | |
| Hi-Line Home | 103,634 | 6,341 | 16.34 | ----- | ----- | ----- |
| Lutheran Home of the Good Shepherd | 511,563 | 27,023 | 18.93 | 680,997 | 34,596 | 19.68 |
| TOTALS: | 5593,537 | 276,129 | 20.26 | 6,336,099 | 273,874 | 23.14 |

*Combination Facilities

TABLE C-3

Estimated Cost (Expense) per patient day in North Central Montana Long Term Care Facilities (1975 & 1976)

| COUNTY & FACILITY | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COST/DAY |
|---|---|---|---|---|---|---|
| BEAVERHEAD | | | | | | |
| Parkview Acres Conv. Hosp. & Nursing Home, Inc. | 287,319 | 18,137 | 15.84 | 342,580 | 18,655 | 18.36 |
| MADISON | | | | | | |
| Madison Co. Nursing Home | 221,127 | 14,090 | 15.69 | 248,868 | 14,157 | 17.58 |
| GALLATIN | | | | | | |
| Bozeman Deaconess Hosp* | 393,261 | 20,632 | 19.06 | ----- | ----- | ----- |
| Bozeman Conv. Center | ----- | ----- | ----- | 622,290 | 24,784 | 25.11 |
| Gallatin County Rest Home | 284,446 | 20,213 | 14.07 | 311,876 | 19,436 | 16.05 |
| Hillcrest Health Center | ----- | ----- | ----- | 40,630 | 2,312 | 17.57 |
| JEFFERSON | | | | | | |
| Hillbrook Nurs. Home | 340,886 | 20,307 | 16.79 | 423,828 | 24,114 | 17.58 |
| LEWIS & CLARK | | | | | | |
| Helena Nursing Home & Health Facilities, Inc. | 357,712 | 17,163 | 20.84 | 229,945 | 14,223 | 16.16 |
| Cooney Convalescent Home | 472,273 | 20,823 | 22.68 | 530,640 | 20,495 | 25.89 |
| Parkside Manor | 252,122 | 19,688 | 12.81 | 333,934 | 18,171 | 18.38 |
| Western Care Nurs. Home | 643,000 | 35,040 | 18.35 | 684,794 | 38,780 | 17.66 |
| BROADWATER | | | | | | |
| Broadwater County Rest Home | 111,116 | 6,324 | 17.57 | 120,495 | 6,275 | 19.20 |
| MEAGHER | | | | | | |
| Mountain Memorial Nursing Home * | ----- | ----- | ----- | ----- | ----- | ----- |
| POWELL | | | | | | |
| Colonial Manor of Deer Lodge | 349,790 | 21,074 | 16.36 | 295,610 | 21,052 | 14.04 |
| DEER LODGE | | | | | | |
| Community Nursing Home of Anaconda * | 513,188 | 24,755 | 20.73 | 565,420 | 24,224 | 23,34 |
| SILVER BOW | | | | | | |
| Crest Nursing Home | 573,520 | 35,012 | 16.38 | 662,338 | 33,525 | 19.76 |
| Butte Park Royal Convalescent Center | ----- | ----- | ----- | ----- | ----- | ----- |
| Silver Bow General Nursing Home * | ----- | ----- | ----- | 293,130 | 35,510 | 14.15 |
| PARK | | | | | | |
| Livingston Conv. Center | 430,634 | 26,686 | 16.13 | 495,487 | 31,822 | 15.57 |
| TOTALS | 5230,394 | 299,944 | 17.44 | 6292,865 | 347,535 | 18.11 |

*Combination Facilities

TABLE C-4

Estimated cost (Expense) per patient day in Southwestern Montana Long Term Care Facilities (1975 & 1976)

| COUNTY & FACILITY | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COST/DAY |
|---|---|---|---|---|---|---|
| FERGUS | | | | | | |
| Valle Vista Manor | 537,337 | 35,036 | 15.34 | 595,836 | 34,874 | 17.09 |
| Central Mt. Hosp. N.H.* | 107,363 | 15,174 | 7.83 | 332,606 | 14,364 | 23.16 |
| WHEATLAND | | | | | | |
| Wheatland Memorial N.H.* | 170,441 | 10,813 | 15.76 | 179,246 | 10,997 | 16.30 |
| MUSSELSHELL | | | | | | |
| Roundup Memorial N.H.* | 107,507 | 5,549 | 19.37 | 119,057 | 5,564 | 21.40 |
| STILLWATER | | | | | | |
| Stillwater Conv. Ctr. | 467,500 | 28,297 | 16.52 | 530,000 | 28,946 | 18.31 |
| SWEETGRASS | | | | | | |
| Pioneer Nursing Home | 241,963 | 17,180 | 14.08 | 251,480 | 17,182 | 14.64 |
| CARBON | | | | | | |
| Carbon Co. Mem. N.H.* | 129,044 | 7,809 | 16.53 | 138,469 | 6,896 | 20.08 |
| Carbon Co. Health Care | ----- | ----- | ----- | ----- | ----- | ----- |
| BIG HORN | | | | | | |
| Big Horn Co. Mem. N.H.* | 219,073 | 11,618 | 18.86 | 247,392 | 11,348 | 21.80 |
| Mtn. View Rest Haven | ----- | ----- | ----- | 124,717 | 7,534 | 16.55 |
| YELLOWSTONE | | | | | | |
| Glendeen N.H. | 201,864 | 12,769 | 15.81 | 214,309 | 13,013 | 16.47 |
| St. John's Lutheran Home | 305,815 | 19,195 | 15.93 | ----- | ----- | ----- |
| Valley N.H. | 621,065 | 35,323 | 17.58 | 683,007 | 35,890 | 19.03 |
| Western Manor N.H. | ----- | ----- | ----- | ----- | ----- | ----- |
| Yellowstone County N.H. | 452,137 | 20,647 | 21.90 | 496,290 | 20,633 | 24.05 |
| Laurel N.H. | 145,088 | 10,038 | 14.45 | 155,772 | 9,902 | 15.73 |
| TOTALS: | 3706,197 | 229,448 | 16.15 | 4068,181 | 217,143 | 18.74 |

*Combination Facilities

TABLE C-5

Estimated cost (Expense) per patient day in South Central Montana Long Term Care Facilities (1975 & 1976)

| COUNTY & FACILITY | 1975 COSTS | 1975 PATIENT DAYS | 1975 COST/DAY | 1976 COSTS | 1976 PATIENT DAYS | 1976 COST/DAY |
|---|---|---|---|---|---|---|
| VALLEY | | | | | | |
| Valley View Nursing Home | ----- | ----- | ----- | 544,902 | 26,788 | 20.34 |
| Frances Mahon Dea. Hosp.* | ----- | ----- | ----- | ----- | ----- | ----- |
| DANIELS | | | | | | |
| Daniels Mem. N.H.* | 191,193 | 10,676 | 17.91 | 201,752 | 9,894 | 20.39 |
| SHERIDAN | | | | | | |
| Sheridan Mem. N.H.* | 213,950 | 12,109 | 17.67 | 250,286 | 12,403 | 20.18 |
| ROOSEVELT | | | | | | |
| Community Hosp. N.H.* | ----- | ----- | ----- | 204,953 | 6,936 | 29.54 |
| Faith Lutheran Ret. Home | ----- | ----- | ----- | 352,743 | 21,715 | 16.24 |
| GARFIELD | | | | | | |
| Garfield Co. Hospital* | 177,744 | 3,865 | 45.99 | ----- | ----- | ----- |
| RICHLAND | | | | | | |
| Richland Homes | ----- | ----- | ----- | 480,675 | 29,930 | 16.06 |
| DAWSON | | | | | | |
| Glendive Community N.H.* | 293,785 | 17,811 | 16.49 | 397,222 | 18,579 | 21.38 |
| ROSEBUD | | | | | | |
| Rosebud Community N.H.* | ----- | ----- | ----- | ----- | ----- | ----- |
| FALLON | | | | | | |
| Fallon Memorial N.H.* | 162,825 | 10,979 | 14.83 | 210,950 | 10,688 | 19.74 |
| CARTER | | | | | | |
| Dahl Memorial N.H.* | 129,872 | 5,595 | 23.21 | ----- | ----- | ----- |
| CUSTER | | | | | | |
| Custer County Rest Home | 493,521 | 35,249 | 14.00 | 527,170 | 36,499 | 14.44 |
| Friendship Villa of Miles City, Inc. | 380,525 | 21,734 | 17.51 | 40,156 | 23,471 | 20.53 |
| PRAIRIE | | | | | | |
| Prairie Community N.H.* | 112,942 | 4,350 | 25.96 | 178,868 | 4,359 | |
| WIBAUX | | | | | | |
| Wibaux County N.H. * | 95,069 | 2,013 | 47.23 | 237,731 | 9,315 | 25.52 |
| PHILLIPS | | | | | | |
| Malta Nursing Home | 150,847 | 11,618 | 12.98 | 183,692 | 12,264 | 14.98 |
| Malta Hospital | ----- | ----- | ----- | ----- | ----- | ----- |
| TOTALS: | 2402,273 | 135,999 | 17.66 | 3811,100 | 222,841 | 17.10 |

*Combination Facilities

TABLE C-6

Estimated cost (Expense) per patient day in Eastern Montana Long Term Care Facilities (1975 & 1976)

## HOME HEALTH CARE

### GOALS, OBJECTIVES AND RECOMMENDATIONS

Home health care should be available and easily accessible to all Montanans. To reach that goal, the following objectives and recommendations are proposed:

1) Within 10 years, home health care should be delivered by comprehensive, coordinated home health agencies serving multi-county districts which could be the 12 planning districts designated by the Governor of Montana, or subunits of these districts.

2) Third-party payors should be encouraged to reimburse for all facets of home health care delivered by home health agencies in Montana, providing that controls on spending are maintained.

3) Neither third-party payors nor individual home health agencies should limit eligibility for home health services to patients who have been receiving institutional care prior to entering the home health program.

4) Grant programs providing start-up funds and expansion funds for home health agencies should be continued, and expanded and new grant programs should be encouraged.

5) Programs should be developed to make the public more aware of home health care services and more educated as to the need and use of such services.

6) The State of Montana should provide fiscal management and consultation services as needed to home health agencies.

7) Rural communities without public health nurses or visiting nurse programs should be encouraged to start these programs and use them as a means for paving the way for home health agencies.

# HOME HEALTH CARE

## 1.0 SERVICE DESCRIPTION

### 1.1 DEFINITION

Home health care is the provision of health services and supportive services to patients in their own homes or at ambulatory settings for the purpose of preventing disease and promoting, maintaining or restoring health or minimizing the effects of illness or disability.[1]

As part of the spectrum of health care services, home care can be provided before, after or as a substitute for hospital, nursing home, or other institutional care. It provides the elderly, the chronically and acutely ill, and the disabled patient another choice of health care settings. For many home health patients, this setting provides valuable psychological benefits in addition to medical benefits by helping them maintain a familiar environment, by providing continued dignity and by maintaining supportive family relationships.[2] Patients can also usually benefit financially through the reduction or replacement of expensive institutional care with less expensive home health visits. Hospital care can cost the patient more than $100 a day, and in some cases, as much as $200 a day.[3] Nursing home care costs approximately $17 to $23 a day,[4] and home health care may cost from $6 to $22 a visit, with the number of visits ranging from one a month to two or three a day,[5] depending on the scope of services provided.

Home health care can be provided by a single health professional, by an agency (such as mental health centers or visiting nurse associations) providing a single service, by an agency providing two or more services, or by a comprehensive agency providing or coordinating all aspects of the complex of home health services.

Agencies certified to provide home health care can be based in hospitals, long-term care facilities, public health departments, or independent sites. They can be non-profit or for-profit.

To be certified by Medicare and to be licensed by the State of Montana, home health agencies must provide skilled nursing services and at least one additional therapeutic service. The most commonly provided home health services in Montana are skilled nursing, home health aides, homemakers, medical social services, nutritional guidance and speech and physical therapy. Other types of care that may be provided include respiratory therapy, diagnostic and laboratory services, equipment and appliances, pharmaceutical services, transportation and occupational therapy. All home health care provided by certified agencies must be ordered by a physician.

## 1.2 GEOGRAPHIC BOUNDARIES

For the purposes of this plan, home health services within the state of Montana will be addressed, and where possible, the need for these services will be described in relation to the Governor's five planning areas and twelve planning districts.

## 2.0 BACKGROUND TRENDS

## 2.1 INCIDENCE, PREVALENCE AND MORTALITY

The age group most directly affected by home health care includes those 65 years of age and older. The Census Bureau estimates that there were 74,000 persons in this age group in Montana in 1975, and the Department of Community Affairs predicts the age group will increase about 14 percent to approximately 85,400 in the next five years.

According to one report, one out of five elderly persons is a potential home health patient.[6)]

The need for home health care services can be measured somewhat by the incidence of acute and chronic conditions, particularly those causing restriction of activity and/or confinement in bed. Data from the National Health Interview Survey shows that during the period from July 1974 to June 1975,[7)] the incidence of acute conditions in the United States was 195.9 cases per 100 persons per year. (Acute conditions are defined as those involving some sort of medical attention or restricted activity within two weeks prior to the interview date.) 82.2 percent of all acute conditions caused some degree of activity restriction. Applying those rates to Montana, there were an estimated 1.5 million cases of acute conditions in 1975, with 1.2 million of those causing some restriction of activity. Nationally, the average duration of disability days per condition was 5.0 days of restricted activity, including 2.2 days of bed disability. For people 65 years of age and older the duration was longer--13.3 days of restricted activity, including 5.8 days spent in bed.

During 1975, an estimated 29.3 million persons nationwide were reported by the Naitonal Health Interview Survey to be limited in activity to some degree because of chronic disease or impairment. This was about 14.1 percent of the civilian, non-institutionalized population of the United States. About half of these persons were limited in the amount or kind of major activity, that is the ability to work, keep house, or go to school. About 25 percent of limited persons were unable to carry on their major activity. Applied to Montana, this means that approximately 105,453 persons were limited in activity to some degree because of chronic disease or impairment. About 26,300 persons were unable to carry on their major activity.

Although not all acutely or chronically ill persons, even those limited in activity, will need home health care, a number of them are potential candidates.

## 2.2 SERVICE TRENDS

One trend in home health care services is that they are beginning to be offered in a more coordinated manner.

Historically, home health care services were provided primarily by a patient's family or friends, or by a single health professional or paraprofessional. Later, agencies such as visiting nurse associations or city and county health departments began offering single aspects of home health care. These agencies, led primarily by nurses, have been leaders in the provision of home health services for many years.

After World War II the first hospital-based home care program in the country was started at a New York hospital. Based on the fact that a patient often needs a variety of health services, this program promoted the concept of coordinated home health services. This concept was further promoted by 1966 Medicare and Medicaid legislation which allows reimbursement for home health care provided by home health agencies delivering at least one therapeutic service in addition to skilled nursing care.

Although the concept of coordinated home health services is gaining momentum, the majority of home health care services still are provided by organizations and agencies offering special pieces of the complex of services, with little help in obtaining other needed services.

One reason for home health agencies not expanding their scope of services is a lack of funding to do so. Problems with finding other sources of funding stifle home health agency growth. This is evidenced also in the relatively small increase in the number of Medicare-certified home health agencies. At the end of 1971, the United States had 2,070 Medicare-certified agencies. By December 1976, that number had grown to 2,337.[8] It is also worthwhile to note that less than 1% of the Medicare and Medicaid dollars spent annually in the United States are spent for home health care.

Trends which may create a greater demand for home health services include the increasing cost of health care and the push for reviews for appropriate utilization of health services. Because of high health care costs, the government and third-party payors, as well as some consumers, are becoming more interested in alternatives to expensive institutional care. Home health is one of the possible alternatives.

Utilization reviews, themselves partially a result of concern over high health care costs and partially a result of concern over quality of care, are finding that many patients could more properly use outpatient care. They also are looking to home health agencies.

## 3.0 SERVICE GUIDELINES AND CRITERIA

### 3.1 COSTS

Home health agencies should have a stable source of funding. Unless they are being partially supported by continuing government or private funds, they should not provide services for which they cannot receive reimbursement.

Organizations planning to start or expand home health services must apply for a certificate of need from the State Health Planning and Resource Development Agency. The awarding of a certificate of need should be based on:

--Demonstrated community need for the service.

--Avoidance of unnecessary duplication of similar home health services.

--Demonstrated financial feasibility. For maximum efficiency, home health personnel should be utilized (in direct provision of service, in travel to a patient's home, or in record keeping) at least 80 percent of the time they are available.

### 3.2 AVAILABILITY

Home health services should be available at least 8 hours a day, 5 days a week, with emergency care available through the agency or by arrangement with other providers on an on-call basis 24 hours a day, 7 days a week.

### 3.3 ACCESSIBILITY

At least limited home health care should be located within 20 miles of a patient's residence. In Montana, where distances are great between towns and where the population base is small, accessibility and financial feasibility of home care may seem to be at odds. To increase both accessibility and feasibility, particularly in rural areas, multi-county home health agencies with centralized administration and satellite units or personnel should be an alternative considered by home health agencies.

Also, the population served by a home health agency should be educated as to the availability, scope and purpose of home health services.

## 3.4 CONTINUITY

To promote continuity of care, home health agencies should strive to provide comprehensive, coordinated home health services instead of just one portion of the complex of services.

Coordination with related community agencies and health personnel is important to provide continuity of care and accessibility. Examples of the personnel and groups with whom home health agencies should coordinate their activities include area physicians, health care institutions, Professional Standards Review Organizations, county welfare departments, county health departments and other social agencies.

Proper patient records also should be maintained to promote continuity of care.

## 3.5 ACCEPTABILITY

Home health care should be provided to those patients whose home environment and readiness for self-care and/or availability of a family-community support structure can contribute to good health. Home health agencies should maintain written criteria for acceptance of patients.

## 3.6 QUALITY

To maintain quality home health care, home health agencies should have a team of professionals which periodically reviews all of the records of all care provided to determine its appropriateness. In addition, as required by law, a registered nurse or physician must supervise all home health agency care (not necessarily by being present while care is given). All staff should have continuing education.

## 4.0 DESCRIPTION OF PRESENT SITUATION

As of August, 1977, 13 home health agencies were licensed by the Licensing and Certification Bureau of the Montana State Department of Health and Environmental Sciences. These agencies, their location, operational organization, services provided, case loads and staff are listed in Table 1. A map showing home health agency service areas and the location of public health departments and public health nurses is shown in Figure 1.

[illegible] of the home health agencies serve multi-county areas. Four are hospital-based, two are non-profit organizations located at independent sites, and seven are operated by public health departments. Informal home health services are also available in parts of the state, depending on the availability of personnel.

Two existing agencies may soon be licensed--a private agency in Yellowstone County and a public health department agency in Gallatin County. In addition, the Blackfeet Tribal Council in Browning has received a certificate of need to start a home health agency in Glacier and Pondera counties.

TABLE 1

HOME HEALTH AGENCIES IN MONTANA, THEIR ORGANIZATION, STAFF, SERVICES, SERVICE AREAS AND CASELOADS

| Agency | Operating Organization | Staff | Services | Service Area | Caseload |
|---|---|---|---|---|---|
| Area V Home Health Agency, Anaconda | Private, Non-Profit Corporation | 8 RN's<br>1 LPN | Nursing,<br>Home Health Aide<br>Homemaker<br>Physical Therapy | Deer Lodge, Madison, Powell and Beaverhead Counties | |
| City-County Home Health Service, Butte | County Health Dept. | 11 nurses<br>5 aides<br>5 homemakers<br>1 social worker | Nursing, Medical-Social Services,<br>Home Health Aide<br>Homemaker<br>Physical Therapy<br>Speech Therapy | Butte-Silver Bow County | 330 |
| Columbus Hospital Home Health Agency, Great Falls | Hospital-based | 2 RNS, 1 LPN,<br>1 orderly-home health aide<br>part-time physical therapist, social worker, dietician | Equipment supplies<br>Nursing, Medical-Social Services,<br>Physical Therapy,<br>Home Health Aides,<br>Speech Therapy<br>Respiratory therapy<br>Nutrition counseling<br>Pharmacy, Clinical labs. | Metropolitan Great Falls and Black Eagle | 60-70 p. mo. |
| Montana Deaconess Medical Center Home Health Agency, Great Falls | Hospital-based | 1 full time RN<br>2 part-time RNs<br>1 ½ nurses aides<br>other services by hospital personnel as needed | Nursing, Medical-Social, Nutritional,<br>Home Health Aides,<br>Homemaker, Occupational Therapy, Physical Therapy, Speech Therapy, Pharmaceutical<br>Laboratory, Equipment & Supplies<br>Respiratory therapy | Metropolitan Great Falls | 80-82 p/mo. |

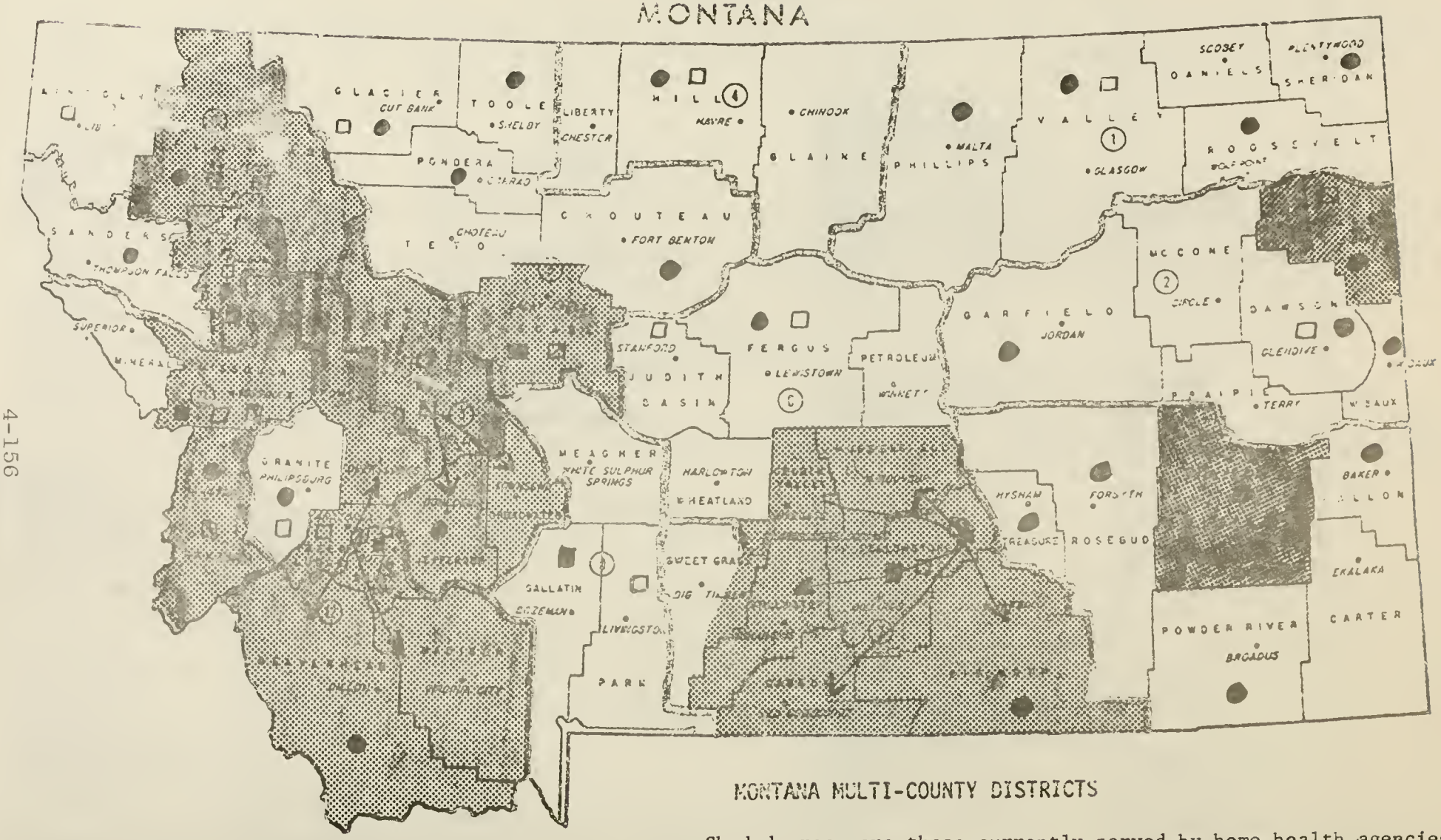
TABLE 1, Continued

| Agency | Operating Organization | Staff | Services | Service Area | Caseload |
|---|---|---|---|---|---|
| [illegible] County Public Health Nursing Service, Hamilton | County Health Dept. | 4 nurses | Nursing<br>Home Health Aide<br>Physical Therapy<br>Speech Therapy | Ravalli County | |
| Westmont Home Health Care, Inc., Helena | Private, Non-Profit Voluntary Organization | 13 registered nurses<br>3 social workers<br>4 physical therapist &<br>1 P.T. aide, and 1 occu/thpst.<br>10 home health aides/homemakers<br>1 respiratory therapist<br>1 dietician<br>1 speech therapist | Homemaking, Resp. Care Nursing, Physical Therapy, Speech Therapy, Medical Social Services, Nutritional Guidence, Appliances & Equipment<br>Home health aide<br>Occupational therapy | Lewis & Clark, Broadwater & Jefferson Counties (Physical Therapy only in Madison County) | 350 |
| Yellowstone City-County Health Dept., Billings | County Health Dept. | 31 nurses<br>5 aides<br>3 physical therapists<br>1 occupational therapist | Nursing, Nutritional, Home Health Aide, Homemaker, Occupational Therapy, Physical Therapy, Speech Therapy | Yellowstone, Carbon, Stillwater, Big Horn, Musselshell, Golden Valley Counties | 317 |
| Flathead Co. Home Health Agency, Kalispell | County Health Dept. | 10 nurses<br>1 speech pathologist<br>1 physical therapist | Nursing, Home Health Aide, Homemaker, Physical Therapy, Occupational Therapy, Speech Therapy<br>Nutritional Guidance | Flathead County | 100 |
| Missoula City-County Health Dept., Missoula | City-County Health Dept. | 1 supervisor<br>2 nurses<br>1 home health aide<br>plus support from other public health nurses | Nursing, Home Health Aide, Homemaker, Physical Therapy, Occupational Therapy, Speech Therapy | Missoula County | 48 |

TABLE 1, Continued

| Agency | Operating Organization | Staff | Services | Service Area | Caseload |
|---|---|---|---|---|---|
| St. Joseph Home Health Agency, Polson | Hospital-based | 2 nurses | Nursing, Medical-Social, Nutritional Guidance, Home Health Aide, Homemaker, Occupational Therapy, Physical Therapy, Speech Therapy, Respiratory Therapy, Pharmacy, Lab, x-ray, equipment & supplies | Lake County and Hot Springs area | |
| Lake County Home Health Agency, Polson | County Health Dept. | 5 RNs,<br>1 LPN,<br>5 home health aides | Nursing,<br>Home Health Aide | Lake County | 50 |
| Richland Co. Health Dept. (Nursing Care in the Home), Sidney | County Health Dept. | 4 part-time RN's<br>2 LPN's<br>2 Home health aides | Nursing,<br>Home Health Aide | Richland County | 58 |
| Holy Rosary Home Health Service, Miles City | Hospital-based | 1 RN,<br>1 home health aide<br>1 social worker | Nursing, medical-social, nutritional guidance, home health aide, respiratory therapy, pharmacy, pastoral care | Miles City & vicinity | 32 |

# MONTANA




MONTANA MULTI-COUNTY DISTRICTS

Shaded areas are those currently served by home health agencies.

- Home health agency office
- Public Health Nursing
- Full-time Health Dept.
- School Nursing

Agencies providing home health services are required, by a law passed by the 1977 Montana Legislature, to be licensed by the State Licensing and Certification Bureau. The licensing requirements are the same as the Medicare conditions of participation.

In addition, new agencies of those expanding their service areas or scope of service must apply for a certificate of need from the State Health Planning and Development Agency.

The State Nursing Bureau provides technical assistance to home health agencies.

Reimbursement for home health services is available through Medicare, Medicaid and limited private insurance policies.

Part A of Medicare reimburses 100 percent of reasonable costs (which are the lower of costs or charges) for up to 100 visits a year for skilled nursing care, physical, speech and occupational therapy, home health aides and some medical social services. This care must be provided after at least three days hospitalization or after discharge from an extended care facility.

Part B of Medicare has two portions which apply to home health. Under the first portion, 100 percent of reasonable costs is paid for up to 100 visits per year after a $60 deductible has been met. The same services are covered as Part A, however, there is no prior hospitalization requirement. The second portion of Part B provides 80 percent reimbursement for an unlimited number of physical therapy and speech therapy visits after a $60 deductible is met. There is no prior hospitalization requirement.[9)]

Medicare pays only for care given to a patient whose condition is fluctuating. It will not pay for preventive or maintenance care, although many home health agencies find these "custodial" services are in heavy demand, especially among the elderly.

Medicaid will pay up to 100 percent of reasonable costs for up to 200 visits a year. Home health services covered under Medicaid include skilled nursing, physical therapy, occupational therapy, speech therapy, home health aide, and some audiological service. There is no prior hospitalization requirement.

It should be noted that the number of allowable or reimburseable visits differs with each patient and is determined by the Medicare and Medicaid program personnel.

Also, because of funding difficulties for the Medicaid program in Montana, the Department of Social and Rehabilitation Services (which administers the program) currently has frozen Medicaid reimbursement to home health agencies at last year's rates.

Home health agencies have had difficulties finding payment sources for preventive care, and maintenance care such as homemaker services. In recent years some funds have been available for homemaking under Title XX of the Social Security Act and Title III of the Older Americans Act.

Private insurance coverage of home health in Montana is so limited it has negligible impact on home health agencies.

## 4.2 PROBLEMS

Funding is the major problem experienced by most home health agencies in Montana. Because of Medicare-Medicaid restrictions (mentioned previously) and similar restrictions on reimbursement from other third-party payors, many home health agencies have funding lags for reimbursement, or carry patients for whom they will recieve no reimbursement, unless the patient can pay for the service himself. Start-up monies have been especially difficult to come by for home health agencies, although some federal grants have recently become available for this purpose.[10)]

In most cases, home health agencies scrape around for funding in addition to reimbursement from patients. Some receive partial funding from the counties they serve, from the hospitals in which they are based, or from private donations. Usually the funding source is unstable.

Another problem home health agencies sometimes face is obtaining crucial physician support and referrals. Sometimes doctors are unaware of the program or are unwilling to participate in it.

Another problem in the provision of home health care in Montana, as was mentioned previously, is distance between patients and home health agencies, in short, accessibility. The rural nature of much of Montana means a great deal of travel time, and therefore expense, is involved in providing home health care.

## 5.0 ESTIMATE OF SERVICE REQUIREMENTS

It is estimated that 10 to 12 persons in every 1,000[11)] could use some type of home health care each year. In Montana, this means that between 7,480 to 8,975 persons are in need of such care.

In determining how this care should be delivered one must consider the previously mentioned criteria: cost, availability, accessibility, continuity, acceptability and quality, as well as the basic demand for the service.

Because of the geographic expanse of Montana and its low population base, meeting these criteria will be difficult. Obviously, it would be impractical to have a home health agency in every county since two counties--Petroleum and Golden Valley--have populations under 1,000 and a number of other counties have less than 5,000

population. Using the estimate of 10 to 12 persons per 1,000 in need of home health care, counties with 5,000 population could expect only 50 to 60 home health patients a year. If each of these patients were carried for an average of two months, the agency would still have less than 10 patients a month.

It appears that home health agencies, in order to keep their personnel busy at least 80 percent of the time, should have a minimum of 110 patients per year. (See Table 2 for figures used to arrive at these criteria). This would require a minimum population base of approximately 11,000.

One way to deliver home health care in Montana is through home health agencies serving multi-county districts with satellite units or personnel. This would provide a greater population base for home health agencies, enabling them to provide more comprehensive services with a smaller percentage of administrative costs.

Using the Governor's 12 planning districts (Figure 2) as home health districts, one can arrive at estimates of home health requirements in Montana (Table 3).

TABLE 2

STEPS IN DETERMINING HOME HEALTH SERVICE REQUIREMENTS

1. Determine expected number of home health patients: 10-12 per 1,000 population.***

2. Multiply the total number of expected patients times the percent expect to receive a particular service to arrive at the number of patients receiving that service. The following percentages are used here:
   --90 percent will require nursing care
   --50 percent will require home health aide services
   --20 percent will require physical therapy
   --4 percent will require speech therapy

3. Multiply the number of patients receiving a particular service (step 2) times the average number of visits per patient for that service to arrive at the total number of annual visits.
   The average number of visits per patient, by service is figured as follows:
   --9 R.N. visits
   --3 L.P.N. Visits
   --18 home health aide visits
   --10 physical therapy visits
   --24 speech therapy visits

4. Multiply the average visits per day per staff times 220 (annual work days) to arrive at the annual visits performed per full-time equivalent staff.
   The average visits per day per staff is figured as follows:
   ----5 visits per day per R.N.
   --6 visits per day per L.P.N.
   --3 visits per day per home health aide
   --4 visits per day by physical therapy staff
   --4 visits per day per speech therapy staff

5. Divide the total annual visits received by patients (Step 3) by the total annual visits performed per full-time equivalent staff (step 4) to arrive at the full-time staff required.

6. Staff should be used no less than 80 percent of the time.

***The estimate of 10-12 patients per 1,000 population is taken from "Developing Home Health Care in Nebraska," The Bureau of Comprehensive Health Planning, State Department of Health, Lincoln, Nebraska, September, 1974. The remainder of the formula was taken "Guidelines for the Planning and Development of Home Health Services in Western Pennsylvania, Comprehensive Health Planning Association of Western Pennsylvania Inc., July 1973.

TABLE 3

ESTIMATES OF HOME HEALTH SERVICE REQUIREMENTS IN MONTANA, BY 12 PLANNING DISTRICTS

| Area | Population | Pts.* | Nursing visits | Aide Visits | P.T. Visits | S.T. Visits |
|---|---|---|---|---|---|---|
| Eastern Montana | | | | | | |
| District 1 | 36,688 | 367 | 2.7 RN<br>.75 LPN | 5 | .8 | .4 |
| District 2 | 27,670 | 277 | 2 RN<br>.6LPN | 3.8 | .6 | .3 |
| District 3 | 28,887 | 289 | 2 RN<br>.6 LPN | 3.9 | .7 | .3 |
| North Central Montana | | | | | | |
| District 4 | 27,267 | 273 | 2 RN<br>.6 LPN | 3.7 | .6 | .3 |
| District 5 | 124,659 | 1246 | 9.2 RN<br>2.5 LPN | 17 | 2.8 | 1.4 |
| South Central Montana | | | | | | |
| District 6 | 23,903 | 239 | 1.8 RN<br>.5 LPN | 3.3 | .5 | .3 |
| District 7 | 123,912 | 1239 | 9 RN<br>2.5 LPN | 16.9 | 2.8 | 1.4 |
| Southwestern Montana | | | | | | |
| District 8 | 48,753 | 488 | 3.6 RN<br>1 LPN | 6.6 | 1.1 | .5 |
| District 9 | 57,358 | 574 | 4.2 RN<br>1.2 LPN | 7.8 | 1.3 | .6 |
| District 12 | 83,092 | 831 | 6.1 RN<br>1.7 LPN | 11.3 | 1.9 | .9 |
| Northwestern Montana | | | | | | |
| District 10 | 90,044 | 900 | 6.6 RN<br>1.3 LPN | 12.3 | 2.1 | 1 |
| District 11 | 92,471 | 925 | 6.8 RN<br>1.9 LPN | 12.6 | 2.1 | 1 |

*The lower estimate of 10-12 patients per 1,000 population (10 per 1,000) is used here because geographic distances and the newness of home health services in most areas indicates a need for conservative estimates at this time.

## REFERENCES


1. Revised Codes of Montana, Section 69-7301, subsection (2), Providing for the Licensing and Regulation of Home Health Agencies in Montana by the Department of Health and Environmental Sciences.

2. American Medical Association, "Statement on Home Health Care," Chicago, Illinois, 1973, Section 5.

3. Taken from Hospital's Annual Reports to the State Health Planning and Resource Development Agency.

4. Taken from Long-Term Care Annual Reports to the State Health Planning and Resource Development Agency.

5. Conversations with home health agencies in Montana.

6. Moss Report on Aging

7. Vital and Health Statistics, "Data from the National Health Survey," U.S. Department of HEW, Rockville, MD, July, 1974 - June, 1975.

8. "HHA Growth Analysis: 1973-1976," Home Health Highlights and American Medical Association, op.cit.

9. Shirley Carlson, Assistant Claims Manager, Blue Cross of Montana (Home Health Medicare Intermediary)

10. Department of Health, Education and Welfare, Public Health Service, "Grants for Home Health Services, Final Regulations," June 3, 1977.

11. Nebraska Bureau of Comprehensive Health Planning, "Developing Home Health Care in Nebraska," Lincoln, Nebraska, September, 1974.

# CHAPTER 5

# HEALTH PLANNING AND RESOURCE DEVELOPMENT GOALS

## 5.0 Overview

The sole purpose of the Montana HSA is to engage in health planning consistent with the mandates of Public Law 93-641; distance, geography and a low population area all lead to a real challenge to the planning system. To insure quality, accessibility, acceptability, and continuity of care, with a firm understanding of cost containment, the goals of the fifteen components in Chapters 3 and 4 have been developed. Additional components shall be developed in future versions of this plan.

Each of these component goals is to be compatible with the general mission of the Health Systems Agency. As specified in the Agency's By-Laws, its mission is to:

1. Improve the health of the residents of the State of Montana,

2. Increase the accessibility, continuity and quality of health services of the state,

3. Restrain increases in the costs of providing health services, and

4. Prevent unnecessary duplication of health services, manpower, and facilities within the state.[1)]

The Agency's initial emphasis was placed upon the last two themes - restraining health costs and minimizing duplication. For this reason the HSA almost immediately began conducting reviews and developing a Health Systems Plan which would support future review decisions.

At the same time, the HSA recognized the need for broad goal statements which would determine future emphasis and strategies. Several attempts were made to come to explicitly state the Agency's overall goals. The purpose of this section is to document the efforts undertaken and to report their results.

## 5.1 Review of Previous Health Plans

In 1974, the Division of Comprehensive Health Planning (CHP) published the Montana State Plan for Health.[2)] This document concentrates on the perceived needs of Montanans identified by the CHP's Advisory Council Committees. These were put into the following problem statements:

1. Too little emphasis is placed on Preventive Health Services in Montana.

2. Health Education has been underestimated as an integral part of the Health Care Delivery System in Montana.

3. Primary and Emergency Medical Services are often not available to Montana citizens.

4. The people of Montana do not receive a uniform minimum level of local public health services.

5. Existing health resources are not utilized to their fullest extent.

6. Too little emphasis is given to Home Health Care as an alternative to institutionalization.

7. There is no uniform strategy for assessing the development and implementation of Mental Health Services in Montana.

8. Coordination is lacking in Alcoholism and Drug Abuse planning and administration.

9. There are not enough providers of Primary Care in Montana.

10. There is a maldistribution of physicians and other health providers in Montana.

11. There are areas of Montana which cannot hope to have a resident physician due to insufficient population bases and/or lack of amenities for the physician and his family.

12. Racial minorities are under-represented in Montana's health professions.

13. Too little emphasis has been given to a coordinated, integrated system of health manpower utilization.

14. There is only a very limited coordination of health facilities offering all levels of care.

15. There is uneconomic overlap in the services offered by health facilities.

16. National legislation and regulation of health facilities and other health concerns do not reflect the needs of rural populations.

17. Recent concern, both nationally and statewide, about the environment has resulted in increasing efforts in money and time in this area. Still there are environmentally-related health problems which need consideration and it is to these that the environmental section of the state plan for health is directed.

18. Health care services to Montana's off-reservation Indian population are often not available.

19. Existing health related data are incomplete, fragmented, and uncoordinated making empirical assessments of proposed health services and/or facilities impossible.

20. The high cost of health care acts as a barrier to receiving medical services.

These priority problems were identified by committess of the CHP's Advisory Council. Objectives were developed in the Montana Plan for Health to address these problems. Each objective provides an avenue toward the realization of one or more general goals stated in the plan. The nine goals are as follows:

1. A system which assures that all levels of health care are accessible to all Montana citizens.

2. A system for allocating health care resources which prevents unnecessary and costly duplication and provides services where needed.

3. A system which places strong emphasis on preventive health services.

4. A system for financing health care which assures that no one will be denied services.

5. The highest quality of health care.

6. A system of health planning which assures participation by all sectors of the population affected by it.

7. A social environment which is conducive to physical and mental health.

8. A physical environment which is conducive to health and safety.

9. A system for coordinating health expenditures which effectively encourages cost containment.

## 5.2 Review of National Priorities

Section 1502 of the National Health Planning and Resources Development Act of 1974 (P. L. 93-641) lists ten areas which deserve priority consideration in developing health planning programs. These are:

1. The provision of primary care services for medically underserved populations, especially those which are located in rural or economically depressed areas.

2. The development of multi-institutional systems for coordination or consolidation of institutional health services (including obstetric, pediatric, emergency medical, intensive and coronary care, and radiation therapy services).

3. The development of medical group practices (especially those whose services are appropriately coordinated or integrated with institutional health services), health maintenance organizations, and other organized systems for the provision of health care.

4. The training and increased utilization of physician assistants, especially nurse clinicians.

5. The development of multi-institutional arrangements for the sharing of support services necessary to all health service institutions.

6. The promotion of activities to achieve needed improvements in the quality of health services, including needs identified by the review activities of Professional Standards Review Organizations under Part B of Title XI of the Social Security Act.

7. The development of health service institutions of the capacity to provide various levels of care (including intensive care, acute general care, and extended care) on a geographically integrated basis.

8. The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health care services.

9. The adoption of uniform cost accounting, simplified reimbursement, and utilization reporting systems and improved management procedures for health service institutions.

10. The development of effective methods of educating the general public concerning proper personal (including preventive) health care and methods for effective use of available health care services.[3)]

Of these, three have been addressed in the current Health Systems Plan - development of multi-institutional systems, sharing support services, and geographically integrated health service institutions.

## 5.3 Identification of Local Needs

To reflect the value decisions of the people of Montana, the Montana Health Systems Agency, Inc. developed a process to explore the health care needs of the communities in Montana. During subarea meetings in October, 1977, council members and those visitors present were asked to identify the most important health problems of their respective communities. After arranging a list of the problems presented, both council members and visitors were asked to rank the three most pressing problems. The results of the ranking process are:

| Subarea | Problems |
|---|---|
| Eastern | 1. Physician Recruitment<br>2. Not Enough Home Health Care<br>3. Excessive Federal Regulation |
| North Central | 1. Health Care Education - Public, Provider, and Preventive<br>2. Health Care, Housing, and Personal Services for the Elderly and Handicapped<br>3. Treatment and Prevention for Local Alcohol Programs |
| South Central | 1. Health Education - Both Public and Provider<br>2. Emergency Services<br>3. A. Transportation for Handicapped and Elderly<br>B. Coordinated Health Care Planning<br>C. Health Care Linkage (referral system) |
| Southwestern | 1. Financial Assistance to the Elderly<br>2. A. Too Much Government<br>B. Lack of Preventive Health and Health Education<br>3. Alcoholism in All Ages |
| Northwestern | 1. Health Education - Public, Provider and Preventative<br>2. Home Health Care - Keeping People Home if Possible, Housing Needs of the Elderly, Nursing and Other Services for the Elderly and Handicapped<br>3. Health Care Regulations |

## 5.4 Health Status Needs

In addition to local community problems, health indicators show those areas of concern that might be addressed by the health service system. Trends and developments of these indicators are used relative to regional and national figures. Should disparities exist among regional and national figures, and local figures; communities should be aware that such a situation exists. These disparities might or might not be translated to community problems depending on that community's values.

Six status goals have been developed to be considered by communities:

- Life expectancy in Montana should be consistent with regional life expectancy rates.
- All children should be immunized for childhood disease before they reach school age.
- Persons with chronic disabilities should be able to function to their fullest capacity.
- The number of deaths in Montana from motor vehicle accidents should be reduced to at least the national average.
- The number of deaths in Montana from heart disease should be reduced to at least the average rate for other mountain states.
- The number of deaths from cancer in Montana should be reduced to at least the average for other mountain states.

## 5.5 Health Systems Goals for Montana

The review of the HSA's mission, the problem statements identified in the 1974 health plan, and the national priorities have led to the development of specific goal statements for the Montana Health Systems Agency. An initial draft of these goals was sent to each member of the HSA Governing Board and Subarea Councils in the form of a questionnaire. This section reports the results of this survey. The overall response rate was 37% (54 completed, out of 145 questionnaires).

The first part of the questionnaire dealt with general goals. These ranged from increasing public understanding of the HSA, its role of responsibility and promoting health planning to statements on reallocating health resources, placing responsibility on the individual for good health, and recognizing social services and health education as important facets of health care delivery. Table 1 lists each of these goal statements. In all cases, a majority of responders agreed with each of these statements.

TABLE 1

| Number Responding | | | | Goal Statements |
|---|---|---|---|---|
| Yes | No | No Response | % Yes* | - General Goals - |
| 50 | 1 | 3 | 93% | Continue Agency work with providers with a special emphasis on prevention of unnecessary duplication of services. |
| 33 | 11 | 10 | 61% | To develop a system of long term nursing care de-emphasizing the medical model and developing a full range of services. |
| 43 | 5 | 6 | 79% | To make certain existing facilities are fully utilized before new facilities are built. |
| 41 | 5 | 8 | 76% | Promote internal hospital planning. |
| 49 | 1 | 4 | 90% | Increase public understanding of the Health Systems Agency. |
| 52 | 1 | 3 | 96% | Provide education for both consumers and providers on 1) health, 2) planning for health care delivery system, and 3) Public Law 93-641. |
| 48 | 1 | 5 | 89% | Promote a sound and cooperative working relationship with state agencies and avoid planning duplication. |
| 39 | 5 | 10 | 67% | To develop and/or re-allocate the resources of health care delivery systems in Montana, such that acute care services are adequately available and geographically distributed to meet the needs of the population. |
| 48 | 3 | 3 | 89% | To foster recognition that the individual has a personal responsibility for good health. |
| 41 | 5 | 8 | 75% | More attention should be paid to the social components of health care which should include, but not necessarily be limited to, the special circumstances of the patient, his family, and the resources and constraints of the community. |

$$* \quad \frac{\text{Yes}}{\text{Yes + No + No Response}} \times 100\%$$

Table 1 - Responses to General Goal Statements for the Montana Health Systems Agency by Governing Board Members and Subarea Council representatives.

The second part of the questionnaire dealt with nine cost effective strategies. The results of this section of the questionnaire are presented in Table 2. In general, the responders appeared to be less positive with these statements about cost containment than they were about the general goals. Nevertheless, a majority agreed with all but one of the statements. Less than 50% of the responders refused to support the statement about reducing the rate of hospital cost inflation to no more than the increase in the consumer price index.

TABLE 2

| Number Responding | | | | Goal Statements |
|---|---|---|---|---|
| Yes | No | No Response | % Yes* | - Cost Effective Goals - |
| 34 | 7 | 13 | 63% | Extend efforts to equalize payments of third party payors. |
| 32 | 13 | 9 | 59% | New service will not be developed until it is shown that there is over utilization of present services. |
| 24 | 14 | 16 | 44% | Reduce overall rate of inflation within the hospital component of the health care sector in HSA so that it does not exceed the rate of inflation in the consumer price index. |
| 30 | 7 | 17 | 56% | Rearrangement of funding priorities toward extended care. |
| 29 | 12 | 13 | 54% | Establish a CPR training program accessible to all citizens in a variety of settings, encourage active participation. |
| 34 | 8 | 12 | 63% | Increase awareness of the need for potential benefits of regular physical conditioning and increase the utilization of existing recreational facilities. |
| 30 | 11 | 13 | 56% | To provide by 1983 a full range of home health services which are available and accessible to residents of HSA regardless of ability to pay. |
| 36 | 6 | 12 | 67% | To provide the delivery of cost effective home health care by 1983. |
| 32 | 5 | 17 | 59% | To stabilize reimbursement for home health care. This will primarily be achieved through legislation, which provides for implementation of reasonable rate structure for promotion of legislation in this area with home health care providers, the Department of Health and Rehabilitation Services, the Office of Community and Medical Facilities and licensure and certification; County Commissioners, the Association of Home Health Agencies and other local parties. |

$$* \quad \frac{\text{Yes}}{\text{Yes + No + No Response}} \times 100\%$$

Table 2 - Responses to Cost Effective Goal statements for the Montana Health Systems Agency by Governing Board Members and Subarea Council representatives.

The third section of the questionnaire contained statements dealing with specific services. Some of these goals dealt with the components already addressed in Chapters 3 and 4 of the Health Systems Plan; others addressed services for which guidelines still had to be developed. The responses to this set of questions arepresented in Table 3. In all, except for the first question, a majority of the persons supported the statement. Exactly one-half of the responders agreed with the last goal - that of encouraging all hospitals to engage in primary care.

TABLE 3

| Number Responding | | | | Goal Statements |
|---|---|---|---|---|
| Yes | No | No Response | % Yes* | - Service Goals - |
| 41 | 3 | 10 | 76% | Encourage swing bed concept in rural areas. |
| 44 | 2 | 8 | 81% | Continue study of validity of bed need formulas presently used. |
| 38 | 5 | 11 | 70% | Develop recommendations of continuity of care. |
| 36 | 5 | 13 | 67% | Work with the Division of Hospital and Medical Facilities to improve data collection and distribution systems. |
| 36 | 4 | 14 | 67% | To develop the highest quality of care through renal disease that is economically feasibly possible in Montana. |
| 38 | 4 | 12 | 70% | Continued study of present cardiovascular labs and open heart surgery units for quality usage and need and cost effectiveness. |
| 32 | 9 | 13 | 59% | Discourage establishment of burn care units, concentrate on developing and utilizing well trained and equipped burn care transfer teams. |
| 41 | 4 | 9 | 75% | Plan for psychiatric care should conform to each county's plan for mental health and insure no duplications of psychiatric services. |
| 41 | 4 | 9 | 76% | Encourage the utilizatinn of home health care with emphasis on prevention and assist in the development of programs and the satellite concept. |
| 35 | 4 | 15 | 65% | Development of regional systems capable of assuring accessibility to high quality and emergency medical services. |
| 46 | 3 | 5 | 85% | Promote health education at all levels. |
| 39 | 2 | 11 | 76% | To insure all Montanans have the best level of primary care possible utilizing appropriate medical manpower. |
| 35 | 9 | 10 | 65% | Encourage utilization and acceptance of nurse practitioners. |
| 39 | 2 | 13 | 72% | To develop cost effectiveness of home health care sources for those in need within Montana as an alternative or supplement to institutional care. |
| 27 | 13 | 14 | 50% | Encourage all hospitals in Montana to provide a primary care component to relieve their outpatient or emergency services. |

$$* \quad \frac{\text{Yes}}{\text{Yes + No + No Response}} \times 100\%$$

Table 3 - Response to Service Goal statements for the Montana Health Systems Agency by Governing Board Members and Subarea Council representatives.

The last section of the questionnaire contained three specific goal statements on cardiovascular diseases and hypertension. The responses are contained in Table 4. Although these statements are far from comprehensive, they do indicate an initial step on the part of the HSA to address health status issues.

TABLE 4

| Number Responding | | | | Goal Statements |
|---|---|---|---|---|
| Yes | No | No Response | % Yes* | - Health Status Goals - |
| 30 | 9 | 15 | 56% | Cardiovascular diseases - to reduce the age adjusted mortality rate for cardiovascular diseases within Montana to the national average. |
| 35 | 6 | 13 | 65% | To reduce mortality and morbidity from cardiovascular diseases by five percent by 1983. |
| 36 | 6 | 12 | 67% | Screen 65 percent of the population 25 and older for hypertension giving priority attention to identified high risk with provisions for follow-up service. |

$$* \quad \frac{\text{Yes}}{\text{Yes + No + No Response}} \times 100\%$$

Table 4 - Responses to Health Status Goal statements for the Montana Health Systems Agency by Governing Board Members and Subarea Council representatives.

## 5.6 Priority Areas for the Montana Health Systems Agency

After examining the MHSA's mission, the national priorities, the statements of local health care problems, indicators of subarea concerns, and the results of the survey on MHSA goals, the MHSA staff has attempted to consolidate these into eight priority areas to guide the Agency's future development. These eight priority areas are:

1. Health Services Should Be Cost Effective.

During the past decade, the demand for and utilization of medical services has grown rapidly. At the same time, the unit price of those services has escalated. In the advent of national health insurance, it is likely that health expenditures will represent more than 10% of the Gross National Product. However, there is growing evidence that the public will not blithely continue to commit an increasing proportion of its total resources to health care:

"Public resistance to pren um increases for Blue Cross, Blue Shield, and other not-for-profit plans throughout the country; the skimpy Medicaid programs established by most States; the substantial cutbacks in Medicaid by States that initially were generous; the recent increase in deductibles under Medicare; and consideration of even further restrictions on both Medicare and Medicaid coverage in the near future are unmistakable signs that Americans are bringing to a halt the virtually unbroken pattern of increasing commitment to expenditures for health care services that has prevailed over the past 30 years."

The fact that only a limited supply of resources can be allocated to health care has important implications for national health policy. Investing in the support of expensive and unvalidated practices may waste resources, entail appreciable risk to patients, and be of less than optimal benefit to society. To avoid this, and to protect the nation's return on its investment in health care, mechanisms should be developed to determine which procedures are most efficacious and have the greatest potential for benefit. Of particular relevance is the need to evaluate the worth of new medical technology. 4)

2. Consumers Must Share the Responsibility for Their Own Health and the Costs of Health Services.

It is up to the individual to adopt the life-style that suits him. But he must be aware of the risks associated with adopting certain habits and he must bear the responsibility for their damaging effects. Among the most serious preventable health problems are lack of exercise, smoking, alcohol consumption, improper driving, and obesity.

According to the President's Council on Physical Fitness and Sports, the American sedentary way of life constitutes a serious national health problem, particularly for the 45% of all American adults who never exercise. Habitual physical inactivity is thought to contribute to hypertension, chronic fatigue and resulting physical inefficiency, premature aging, the poor musculature and lack of flexibility that are the major causes of lower back pain and injury, mental tension, coronary heart disease and obesity.

By contrast, studies have reported that regular exercise can lower serum triglycerides, reduce the clinical manifestations of heart disease, improve the efficiency of the heart and circulation, and reduce blood pressure levels in individuals with hypertension.

According to the Federal Trade Commission, the per capita consumption of cigaretts for the eighteen and older population for 1974 was 4,270, the highest since 1963, the year before the Surgeon General's Report. Since 1964 there has been a decline in smoking in the 25 and older population, particularly among men, but teenage smoking levels, especially for women, have increased. There is strong evidence that smoking-related diseases include cancer of the lung, larynx, lip, oral cavity, esophagus, bladder and other urinary organs; chronic bronchitis and emphysema; arteriosclerotic heart disease, including coronary artery disease; and specified non-coronary cardiovascular diseases. The President's Science Advisory Committee, in its 1973 report, Chemicals and Health, estimated that in 1967, 16% of the total mortality could be linked to cigarette smoking. The 1967 Public Health Service Report, Cigarette Smoking and Health, noted that in general, the more cigaretts a person smoked, the more days of illness he was likely to have.

The consumption of alcohol permeates our society. More than 100 million Americans are drinkers, and nine million of them are classified as alcoholics or alcohol abusers. Alcohol plays a role in half of the suicides. The cost to society is more than $15 billion in lost work time, health and welfare services, and property damage. While moderate drinking apparently does little or no harm, its abuse takes a significant toll. Cirrhosis of the liver is a major cause of illness and death in alcoholics, and excessive use of alcohol, especially when combined with smoking, increases the risk of developing certain cancers. Other serious problems include: malnutrition; lowered resistance to infectious disease; gastrointestinal irritations; muscle diseases and tremors; and damage to the brain or peripheral nervous system. Abuse during pregnancy has serious health effects on the offspring and the significance of heredity in alcoholism is as yet unresolved.

In 1973, motor vehicle accidents accounted for 55,800 deaths and an estimated 2,000,000 disabling injuries. They are the leading cause of death of those between the ages of 5 and 35. Improper driving (including speeding) and alcohol and drug abuse were major contributing factors. Studies by the National Safety Council have concluded that reduced speeds, particularly the 55 m.p.h. limit, saved approximately 5,600 lives in 1973-1974. The Council estimates that if drunken driving were controlled, one-half of the fatalities could be eliminated.

Seat belts, if everyone wore them, could save an estimated 14,000 lives or 25% of the annual motor vehicle fatalities.[5)]

3. Health Education Programs Should be Emphasized.

Optimum health for the nation's population is the goal of public health. Today, more than ever before, examination of the causes of ill health and of the means available for improving health status is focusing on health education as a way to achieve public health goals. The conviction is growing that the next major advances in health will come from changes in the life-styles of individuals and from control of health hazards in the environment. The education process is a way of alerting citizens to personal and societal obstacles to good health and offers a channel for achieving needed change.

Health education can help prepare people to take greater responsibility for their own health and that of their families and communities. Through health education individuals acquire the information, skills and values for making responsible decisions about their personal health. Since health is influenced by environment, social conditions, institutions and economic policies, solutions to complicated health problems often require coordinated citizen action.

The goal of health education is the health-educated consumer-citizen who adopts a health-promoting life-style, wisely selects and uses health care resources, products and services; and influences public policy in planning on health care issues and larger environmental matters that affect health.[6)]

4. More Attention Should be Paid to the Social Components of Health Care Which Should Include, But Not Necessarily be Limited to, the Special Circumstances of the Patient, His Family, and the Resources and Constraints of the Community.

There is a great emphasis today on the development of health care facilities and services. The role of social work in the delivery of health services or in the development of such services is not widely accepted or appreciated.

Because of the limited exposure to or awareness of the role of social work as a profession many health providers appear unaware that "social work is concerned with the social functioning of individuals and groups in relation to the various problems of living." Their limited view of social work as social welfare and then narrowing that to public assistance (money) has not helped to have social services included into the development of health care services. Social services continues to have an identity problem within the health field.[7)]

5. Health Services Should be Coordinated at the Local Level to the Maximum Extent Possible.

The rising cost of medical care, the continuing shortage of health manpower, and the fragmentation of health services has generated interest in both the organization of the health system and in inter-institutional relationships. With clearly limited health resources, use of available facilities, manpower and finances must be effectively planned to assure that comprehensive health services are available to local communities.

The increasingly stringent state and federal regulations make it difficult for health facilities to continue to operate. This is especially true of small facilities which complain that they are being "put out of business." The trend is accelerating in response to increasing demands for cost containment and efficiency coupled with tougher regulations concerning required equipment, manpower and reports.

These institutions must act now to avoid being put out of business. Small health facilities, hospitals, and nursing homes will find it difficult to retain financial viability in the future unless immediate steps are taken to strengthen their cost containment potential and to improve their quality. Unless these institutions become more flexible in viewing organizational and operational options, the existing trend of threat of facility closures will only increase with communities finding themselves without any health care facility as the price for attempting to retain the status quo. The survival of all health facilities lies with the degree of flexibility which can be maintained in meeting the challenges of the future.[8)]

6. Primary Care Physicians Should be Recruited to Shortage Areas.

If one considers the sources of supply for Montana's health manpower, he finds two groups. First, there are persons raised and educated elsewhere who locate in Montana. Second, there are persons raised in Montana who choose a health career and are either educated here or elsewhere depending on Montana's educational opportunities in their chosen field. By far the greatest numbers of Montana's primary health manpower (except for nurses) currently come from the former group.

It is suggested here that native Montanans represent the best investment in the long run to meet Montana's health manpower needs because they know Montana's way of life and its problems and would, therefore, tend to remain here. The ingredients necessary to enable Montana's youth to become Montana's health manpower include 1) interesting them in health careers, 2) assuring qualified applicants access to educational programs within and outside the State, and 3) providing incentives to attract the trained health manpower personnel back to the State. While this approach should represent the long-term emphasis, it will take time.

Meanwhile, the focus should be on attracting persons from other areas. As might be imagined, much of the work done to enhance the situation for persons from other areas would better the possibility of retaining Montana natives as they begin to practice here. The ingredients necessary to attract outsiders to the State include: 1) promoting the knowledge of Montana's appeal among students and practitioners in the health careers, 2) providing incentives for persons to locate here (e.g., scholarships with service commitments, monetary guarantees, etc.), and 3) providing supports which will make practice here more attractive (e.g., continuing education opportunities, opportunities for peer interaction, backup for off-hours through a team approach).[9]

7. Alternatives to Inpatient Care Should be Encouraged.

Institutional care is perhaps the most costly health care there is. Alternatives to this care are being devised and tested. For example, one day surgeries seem to be successful in some areas for certain types of operations as an alternative to hospitalization. The Montana Foundation for Medical Care is finding that substantial numbers of nursing home patients are being given services beyond their needs. It now appears that many current nursing home residents could get along in less restrictive settings if such facilities were available. The State is in the process of integrating former mental patients back into group homes in their respective communities.

It appears that the most successful method of encouraging the use of alternate systems is by containing inpatient expansion. As long as there are unfilled beds in hospitals and nursing homes, there is no pressure to try and use alternatives. Yet, these alternatives should also be financially viable (i.e., provided at less cost than the programs they are designed to augment), appropriate (so that the people will use it and the persons giving the care are qualified to do so). At the same time, these alternative systems cannot become viable programs until third party financing supports them. At the present time, health financing systems do not view these programs as cost saving efforts. Rather, they fear that providing coverage would result in an additional drain on their resources.

8. Unnecessary Duplication Within The Health Field Should Be Minimized.

Duplication can appear at all levels in the health delivery system--duplication of health facilities and services, duplication of paperwork, and duplication of plans. Each of these take away from the overall efficiency of the system.

During the first year, the Montana HSA concentrated on preventing duplication of health services by implementing reviews almost immediately and preparing a health systems plan which would minimize future duplication. Yet, there are subtler forms of duplication. The many different forms which providers must fill out to get third party reimbursement is one example. Within the Department of Institutions, the alcoholism and mental health bureaus have different forms. If an individual is admitted

for a mental problem and then an alcohol related problem is found, another form must be filled out. Another illustration of duplication is the proliferation of plans--the Health Systems Plan and the State Health Plan, the Mental Health Plan and the Governor's Advisory Commission on Mental Health Plan, the Social Service Plan (SRS) and the Developmentally Disabled Plan (SRS) and all the other federal health and social programs which require a plan. To have competing plans with diametrically opposed objectives is the height of absurdity in a state with as few people as we have. Although it is unrealistic to believe that all these will someday be combined, the MHSA should work toward a coordinated system in which all health programs are working toward a common end.

## REFERENCES


1) Health Systems Agency By-laws.

2) Division of Comprehensive Health Planning, Department of Health & Environmental Sciences, Montana State Plan for Health, August, 1974.

3) Public Law 93-641.

4) U.S. Department of Health Education and Welfare, Public Health Service, Forward Plan For Health, FY 1977-1981, June 1975.

5) Ibid.

6) American Public Health Association, Toward A Policy In Health Education and Public Health, November 1977.

7) Galinkin, George B, Ed, Readings on Social Services in the Health Professions, University Press of America, 1976.

8) Montana State Plan for Health, OpCit.

9) Ibid.

# APPENDIX 1

## BACKGROUND INFORMATION

### 1.0 AUTHORITY

The Health Planning and Resources Development Act of 1974, also know as P.L. 93-641, created a network of health systems agencies throughout the country responsible for health planning and development. This legislation has two principal parts, Title XV and Title XVI. Title XV deals with health planning and is responsible for establishing 213 "health service areas" nationwide. In each health service area, a Health Systems Agency was created. The geographic areas which these agencies are to represent have been designated by the respective state governors and approved by the Department of Health, Education, and Welfare. In Montana, one Health Systems Agency has been designated to serve the state. The second principal part of P.L. 93-641, Title XVI, dictates the policy for authorizing grants or loans to the states for the modernization and construction of new outpatient facilities; and for the conversion of unneeded facilities to provide health services that are needed.

### 1.1 MISSION AND PURPOSE OF THE HEALTH SYSTEMS AGENCY

The two major requirements of a health systems agency are to establish a health systems plan (HSP) and an annual implementation plan (AIP) for the area it serves. The health systems plan is to identify the major, local health problems, analyze the service resources available to meet the needs of patients experiencing health problems, and propose improvements in the delivery of these services. The proposals for improvements are formulated in terms of goals and objectives for the health care system. The annual implementation plan is shorter than the health systems plan and serves a different purpose. The AIP lists objectives for attaining the goals stated in the HSP for a one year period; it is a short-term plan for implementing the HSP. In contrast, the HSP presents a comprehensive overview of both the health of the community and the health care system and recommends long-term solutions for their improvement.

The National Health Planning and Resources Development Act (P.L. 93-641) mandates a comprehensive planning, regulatory and developmental effort to address three major goals:

- the improvement of the health status of the nation's population
- the restraint of escalating health care costs
- the expansion of access to primary health care services for the population.

Thus the purpose of the Health Systems Agency in Montana, as stipulated by P.L. 93-641, is:

- to improve the general health of all Montana citizens
- to restrain increases in cost of providing medical services in Montana

- to prevent any unnecessary duplication of health resources in the state
- to increase accessibility, acceptabliity, continuity, and quality of medical services

.1.1 MONTANA HEALTH SYSTEMS AGENCY RESPONSIBILITY

The Montana Health Systems Agency is responsible for addressing four major tasks. First, it is the responsibility of the HSA to gather and analyze data concerning:

- the status of the health of Montana citizens
- the status of the health care delivery system and its use in Montana
- the effect of the existing health care delivery system on health of Montanans
- the number, type, and location of the health resources within the State, and the patterns of utilization of those resources
- the environmental and occupational exposure factors affecting health conditions.

Secondly, the Montana Health Systems Agency is required to draw up an annual revised health systems plan (HSP) and an annual implementation plan (AIP).

Thirdly, the Montana Health Systems Agency, when fully designated, may establish an Area Health Services Development Fund. From this fund the HSA may award grants and enter into contracts for planning and developing projects and programs which it determines are needed in Montana and which advance its plan. These funds cannot be used to build new facilities or to deliver medical services.

Lastly, when the HSA becomes fully designated, it will review, approve or disapprove all federal grant money under:

- The Public Health Service Act
- The Community Mental Health Centers Act
- and The Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitaion Act

The review, approval, or disapproval of all federal grant money will be dependent upon the health plan adopted for Montana.

The Montana Health Systems Agency will also review for approval or disapproval the use of any federal funds within Montana made through allocations to the state under formula grant programs. Other HSA responsibilities include:

- coordinating its activities with Professional Standards Review Organizations (PSRO's) as well as with other appropriate planning and regulatory agencies
- assisting and working with the State Health Planning and Development Agency in the performance of its planning functions
- recommending to the state on an annual basis projects for facility modernization, construction, etc.
- reviewing at least every five years all institutional health services in the area.

# APPENDIX 2

## STATISTICAL DESCRIPTION OF THE MONTANA SERVICE AREA

### 1.0 INTRODUCTION

The overall data management and analysis strategy being used by the Montana Health Systems Agency (HSA) and State Health Planning and Development Agency (SHPDA) is to consolidate most of these activities in a single organization. The Bureau of Records and Statistics (BRS) is currently under contract with the SHPDA to develop a central data base for the two agencies.

It is intended that the initial data base consist of three components:

- Facilities Data
- Manpower Information, and
- Vital Statistics

For the past three years, the state agency has annually collected basic data from each hospital and long term care facility in the state. Up to this time, however, this data has not been computerized in a usable form. Consequently, the facilities' data used in Chapter 4 were tabulated by hand.

Up to this time, manpower data has been kept by the individual licensing boards. Most of these data bases are manual and little effort has been made to summarize the information contained therein. This is one of the reasons that health manpower has not been addressed in the first Health System Plan.

Basic Vital Statistics data is already being collected and processed by the State's Bureau of Records and Statistics under a CH5S contract. This information has been made available in summary form to the two health planning agencies, and is summarized later in this Appendix (Section 5.0).

In Montana, local population estimates and projections are prepared by the Department of Community Affairs. These are also summarized in this Appendix (Section 2.0).

In other areas concerning data acquisition the HSA has entered into cooperative agreements with the State's Medicaid Program, the Governor's Office of Budget and Program Planning (A-95 Agency), and the Montana Hospitals Rate Review System. Agreement with the State PSRO is pending. Each of these agreements specify that the HSA has access to these agency's data, subject, of course, to confidentiality policy.

In developing specific components for the tertiary services of the Health Plan (Chapter 3), the HSA staff has contacted individual institutions for specific utilization information. Most hospitals have cooperated and sent the information promptly. In these components, it is the responsibility of the planner preparing the guidelines to gather the utilization data needed. This policy will continue as the staff begins to address the various federally funded health programs in the state.

In order to provide the people of Montana the opportunity to make informed judgements concerning the complex nature of health care, it is essential that the proper data be used by the Montana Health Systems Agency, Inc. Proper data consists of information that is accurate, up-to-date, aggregated from local sources wherever possible, and presented in a manner understandable to the targeted audience. In addition to aggregating data from local sources wherever possible, it is also important to involve county, regional, and state organizations in the task of maintaining a comprehensive, uniform, and consistent information system to allow the data gathered to be as useful as possible as quickly as possible.

Where local sources of data have not been available for incorporation into the MHSA's data management system, the next level * of data is used. Often, where national data is used, local comments precipitate adjustments.

It is the philosophy of the MHSA, that wherever possible, existing sources of information are to be used, and where local data is not available, the best indicator available is to be used, subject to local review. The information that the people of Montana use in their decision making can be no better than the data sources used. It is of paramount importance then, that the data management system used by the MHSA be as accurate as possible; given the constraints of national programs on the one hand, and local applications on the other.

The following sections of this appendix address the indicators of population, geography, economics and health status. Specific data sources for the health services components have been presented in Chapters 3 and 4; the following sections allow an accessment to be made of general characteristics to be used in health planning for the people of Montana.

* Level in most desirable order of use: service area, local, county, sub-state regional, state, multi-state regional, national.

## 2.0 POPULATION CHARACTERISTICS

The Health Systems Plan is supposed to be a blueprint for the health care delivery system five years in the future. Consequently, projections have to be made as to the number of people who will be needing health care services in the future. Throughout this document, the HSA has used 1976 estimates furnished by the Bureau of the Census to depict the current situation. To estimate population changes, projections for 1985 which were prepared and published by the Department of Community Affairs were used. Both estimates used counties as their geographical base. Tables 1 through 5 compare the 1970 census population with the 1976 estimates and 1985 projections for each county and subarea.

It is well documented that different age groups use different health services. For example, children under five could be the primary target of immunizations, females in the child bearing years (generally between the ages of 15 and 44), males between 45 and 64 are the most prone to heart attacks and the elderly (over 65 years of age) the primary users of long term care facilities and home health services. Tables 6 through 10 show the estimated 1975 and projected 1985 population for four age groups by county and subarea. These estimates were prepared by the Department of Community Affairs, State of Montana.

Finally, the largest racial minority in Montana is the Native American or American Indian constituting 3.9% of the population. Estimates of the number of Native Americans are presented in Table 11. These estimates were prepared for the Coordinator of Indian Affairs, Office of the Governor, Helena, Montana. No 1985 projections on the number of Native Americans in Montana are available.

CENSUS POPULATION

NORTHWESTERN

| County | 1970 [1] | 1976 [2] | 1985 [3] |
|---|---|---|---|
| Lincoln | 18,063 | 16,400 | 16,589 |
| Flathead | 39,460 | 45,400 | 56,402 |
| Sanders | 7,093 | 8,000 | 9,588 |
| Lake | 14,445 | 17,400 | 19,876 |
| Mineral | 2,958 | 3,500 | 4,325 |
| Ravalli | 14,409 | 18,500 | 21,142 |
| Missoula | 58,263 | 65,500 | 78,171 |
| TOTALS | 154,691 | 174,700 | 206,093 |

1) US Bureau of the Census Reports , 1970
2) US Bureau of the Census Estimate
3) Montana Department of Community Affairs Projections medium series, county totals, 1977

TABLE 1 - 1970 census figures, 1976 census estimates and 1985 projections of Montana's population by County, Northwestern Montana

CENSUS POPULATION

NORTH CENTRAL

| County | 1970[1)] | 1976[2)] | 1985[3)] |
|---|---|---|---|
| Glacier | 10,783 | 10,900 | 11,961 |
| Toole | 8,839 | 5,300 | 5,174 |
| Pondera | 6,611 | 7,000 | 7,462 |
| Teton | 6,116 | 6,100 | 7,875 |
| Cascade | 81,804 | 83,600 | 88,274 |
| Chouteau | 6,473 | 6,200 | 6,491 |
| Hill | 17,358 | 18,100 | 19,641 |
| Blaine | 6,727 | 7,400 | 7,191 |
| Liberty | 2,359 | 2,500 | 2,697 |
| TOTALS | 147,070 | 147,100 | 156,766 |

1) US Bureau of the Census Reports, 1970
2) US Bureau of the Census Estimate
3) Montana Department of Community Affairs Projections medium series, county totals, 1977

TABLE 2 - 1970 census figures, 1976 census estimates and 1985 projections of Montana's population by County, North Central Montana

CENSUS POPULATION

SOUTHWESTERN

| County | 1970[1)] | 1976[2)] | 1985[3)] |
|---|---|---|---|
| Beaverhead | 8.187 | 8,200 | 9,095 |
| Madison | 5,014 | 5,400 | 5,556 |
| Gallatin | 32,505 | 37,400 | 44,058 |
| Lewis & Clark | 33,281 | 38,000 | 46,931 |
| Broadwater | 2,526 | 3,100 | 3,428 |
| Jefferson | 5,238 | 6,900 | 8,169 |
| Meagher | 2,122 | 2,200 | 2,216 |
| Silver Bow | 41,981 | 41,100 | 44,457 |
| Deer Lodge | 15,652 | 14,600 | 15,482 |
| Powell | 6,600 | 7,600 | 9,015 |
| Granite | 2,737 | 2,700 | 2,801 |
| Park | 11,197 | 12,600 | 14,590 |
| TOTALS | 167,040 | 179,800 | 205,798 |

1) US Bureau of the Census Reports , 1970
2) US Bureau of the Census Estimate
3) Montana Department of Community Affairs Projections medium series, county totals, 1977

TABLE 3 - 1970 census figures, 1976 census estimates and 1985 projections of Montana's population by County, Southwestern Montana

CENSUS POPULATION

SOUTH CENTRAL

| County | 1970 [1] | 1976 [2] | 1985 [3] |
|---|---|---|---|
| Fergus | 12,611 | 13,000 | 13,617 |
| Petroleum | 675 | 700 | 678 |
| Judith Basin | 2,667 | 2,700 | 2,745 |
| Wheatland | 2,529 | 2,500 | 1,923 |
| Golden Valley | 931 | 1,000 | 917 |
| Musselshell | 3,734 | 4,400 | 4,796 |
| Sweet Grass | 2,980 | 3,200 | 2,897 |
| Stillwater | 4,632 | 5,200 | 6,090 |
| Carbon | 7,080 | 8,300 | 8,889 |
| Big Horn | 19,057 | 10,600 | 12,161 |
| Yellowstone | 87,367 | 99,600 | 126,106 |
| TOTALS | 144,263 | 151,200 | 180,819 |

1) US Bureau of the Census Reports , 1970
2) US Bureau of the Census Estimate
3) Montana Department of Community Affairs Projections medium series, county totals, 1977

TABLE 4 - 1970 census figures, 1976 census estimates and 1985 projections of Montana's population by County, South Central Montana

CENSUS POPULATION

EASTERN

| County | 1970 [1] | 1976 [2] | 1985 [3] |
|---|---|---|---|
| Valley | 11,471 | 13,400 | 16,325 |
| Daniels | 3,083 | 3,200 | 3,143 |
| Sheridan | 5,779 | 5,500 | 5,144 |
| Roosevelt | 10,365 | 10,500 | 11,272 |
| McCone | 2,875 | 2,700 | 2,613 |
| Garfield | 1,796 | 1,800 | 1,784 |
| Richland | 9,837 | 10,300 | 12,093 |
| Dawson | 11,269 | 11,200 | 13,067 |
| Wibaux | 1,465 | 1,500 | 1,538 |
| Rosebud | 6,032 | 9,900 | 11,230 |
| Treasure | 1,069 | 1,300 | 1,236 |
| Powder River | 2,862 | 2,500 | 2,285 |
| Custer | 12,174 | 13,000 | 14,642 |
| Prairie | 1,752 | 1,700 | 1,915 |
| Phillips | 5,386 | 5,500 | 5,757 |
| Fallon | 4,050 | 3,900 | 4,326 |
| Carter | 1,956 | 1,800 | 1,882 |
| TOTALS | 93,221 | 99,700 | 110,252 |

1) US Bureau of the Census Reports, 1970
2) US Bureau of the Census Estimate
3) Montana Department of Community Affairs Projections medium series, county totals, 1977

TABLE 5 - 1970 census figures, 1976 census estimates and 1985 projections of Montana's population by County, Eastern Montana

TABLE 6

1975 & 1985 POPULATION PROJECTIONS BY AGE GROUP & COUNTY

NORTHWESTERN MONTANA

| COUNTY | TOTAL POP. | | AGE 0 - 4 | | AGE 5 - 17 | | AGE 18 - 64 | | AGE 65 + | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 |
| Flathead | 44,600 | 56,402 | 3,611 | 4,679 | 11,754 | 12,791 | 24,640 | 33,309 | 4,595 | 5,623 |
| Lake | 17,100 | 19,876 | 1,425 | 1,603 | 4,434 | 4,551 | 8,906 | 11,210 | 2,335 | 2,512 |
| Lincoln | 16,500 | 16,589 | 1,433 | 1,285 | 4,587 | 3,634 | 9,334 | 10,108 | 1,146 | 1,562 |
| Mineral | 3,500 | 4,325 | 295 | 373 | 972 | 1,036 | 1,967 | 2,610 | 266 | 306 |
| Missoula | 64,600 | 78,171 | 5,106 | 6,240 | 14,317 | 14,404 | 40,199 | 51,370 | 4,978 | 6,157 |
| Ravalli | 18,400 | 21,142 | 1,321 | 1,630 | 4,523 | 4,483 | 9,728 | 11,886 | 2,828 | 3,143 |
| Sanders | 8,100 | 9,588 | 615 | 750 | 2,061 | 2,141 | 4,350 | 5,539 | 1,074 | 1,158 |
| TOTALS | 172,800 | 206,093 | 13,806 | 16,560 | 42,648 | 43,040 | 99,124 | 126,032 | 17,222 | 20,461 |

SOURCE: Montana Population Projections 1975 - 2000, Division of Research & Information Systems, Montana Department of Community Affairs, Aug. 1977 (Medium Series)

TABLE 7

1975 & 1985 POPULATION PROJECTIONS BY AGE GROUP & COUNTY

NORTH CENTRAL MONTANA

| COUNTY | TOTAL POP. | | AGE 0 - 4 | | AGE 5 - 17 | | AGE 18 - 64 | | AGE 65 + | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 |
| Blaine | 6,800 | 7,191 | 617 | 631 | 1,827 | 1,639 | 3,603 | 4,191 | 753 | 730 |
| Cascade | 83,900 | 88,274 | 7,668 | 8,195 | 21,061 | 19,503 | 47,921 | 52,875 | 7,250 | 7,701 |
| Choteau | 6,300 | 6,491 | 496 | 551 | 1,540 | 1,314 | 3,503 | 3,845 | 761 | 781 |
| Glacier | 11,100 | 11,961 | 1,188 | 1,041 | 3,361 | 3,142 | 5,635 | 6,631 | 916 | 1,147 |
| Hill | 17,900 | 19,641 | 1,552 | 1,694 | 4,392 | 4,046 | 10,389 | 11,960 | 1,567 | 1,941 |
| Liberty | 2,500 | 2,697 | 190 | 228 | 671 | 562 | 1,421 | 1,636 | 218 | 271 |
| Pondera | 6,900 | 7,462 | 583 | 647 | 1,868 | 1,673 | 3,718 | 4,329 | 731 | 813 |
| Teton | 6,500 | 7,875 | 458 | 610 | 1,659 | 1,710 | 3,582 | 4,621 | 801 | 934 |
| Toole | 5,400 | 5,174 | 398 | 412 | 1,416 | 1,079 | 2,994 | 3,048 | 592 | 635 |
| TOTALS | 147,300 | 156,766 | 13,150 | 14,009 | 37,795 | 34,668 | 82,766 | 93,136 | 13,589 | 14,953 |

SOURCE: Montana Population Projections 1975 - 2000, Division of Research & Information Systems, Montana Department of Community Affairs, Aug. 1977 (Medium Series)

TABLE 8

1975 & 1985 POPULATION PROJECTIONS BY AGE GROUP & COUNTY

SOUTHWESTERN MONTANA

| COUNTY | TOTAL POP. | | AGE 0 - 4 | | AGE 5 - 17 | | AGE 18 - 64 | | AGE 65 + | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 |
| Beaverhead | 8,300 | 9,095 | 699 | 868 | 1,849 | 1,798 | 4,862 | 5,485 | 890 | 944 |
| Broadwater | 2,800 | 3,428 | 206 | 287 | 732 | 771 | 1,524 | 2,002 | 338 | 368 |
| Deer Lodge | 15,200 | 15,482 | 1,144 | 1,245 | 3,482 | 2,991 | 8,630 | 9,071 | 1,944 | 2,175 |
| Gallatin | 37,300 | 44,058 | 2,851 | 3,527 | 7,128 | 7,342 | 24,304 | 29,510 | 3,017 | 3,679 |
| Granite | 2,700 | 2,801 | 206 | 236 | 638 | 564 | 1,528 | 1,600 | 328 | 401 |
| Jefferson | 6,700 | 8,169 | 539 | 684 | 1,724 | 1,869 | 3,844 | 4,948 | 593 | 668 |
| Lewis & Clark | 36,900 | 46,931 | 3,008 | 3,865 | 9,247 | 10,526 | 21,020 | 28,090 | 3,625 | 4,450 |
| Madison | 5,800 | 5,556 | 396 | 422 | 1,367 | 1,072 | 3,163 | 3,223 | 874 | 839 |
| Meagher | 2,300 | 2,216 | 174 | 173 | 527 | 429 | 1,327 | 1,326 | 272 | 288 |
| Park | 12,100 | 14,590 | 839 | 1,143 | 2,778 | 3,088 | 6,768 | 8,472 | 1,715 | 1,887 |
| Powell | 7,500 | 9,015 | 568 | 729 | 1,865 | 1,983 | 4,373 | 5,571 | 694 | 732 |
| Silver Bow | 43,000 | 44,457 | 3,422 | 3,581 | 10,618 | 9,335 | 23,847 | 26,555 | 5,113 | 4,986 |
| TOTALS | 180,600 | 205,798 | 14,052 | 16,760 | 41,955 | 41,768 | 105,190 | 125,353 | 19,403 | 21,417 |

SOURCE: Montana Population Projections 1975 - 2000 Division of Research & Information Systems, Montana Department of Community Affairs, Aug. 1977 (Medium Series)

TABLE 9

1975 & 1985 POPULATION PROJECTIONS BY AGE GROUP & COUNTY

SOUTH CENTRAL MONTANA

| COUNTY | TOTAL POP. | | AGE 0 - 4 | | AGE 5 - 17 | | AGE 18 - 64 | | AGE 65 + | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 |
| Big Horn | 10,900 | 12,161 | 1,221 | 1,055 | 3,138 | 3,162 | 5,780 | 7,053 | 761 | 891 |
| Carbon | 7,800 | 8,889 | 495 | 672 | 1,734 | 1,796 | 4,213 | 5,010 | 1,358 | 1,411 |
| Fergus | 13,000 | 13,617 | 927 | 1,040 | 3,232 | 2,705 | 6,892 | 7,811 | 1,949 | 2,061 |
| Golden Valley | 900 | 917 | 59 | 70 | 188 | 160 | 510 | 534 | 143 | 153 |
| Judith Basin | 2,700 | 2,745 | 193 | 233 | 646 | 531 | 1,445 | 1,530 | 416 | 451 |
| Musselshell | 4,200 | 4,796 | 297 | 373 | 963 | 1,008 | 2,292 | 2,761 | 648 | 654 |
| Petroleum | 700 | 678 | 48 | 50 | 178 | 144 | 425 | 435 | 49 | 49 |
| Stillwater | 5,200 | 6,090 | 351 | 472 | 1,231 | 1,290 | 2,874 | 3,533 | 744 | 795 |
| Sweet Grass | 3,000 | 2,897 | 210 | 221 | 630 | 540 | 1,628 | 1,657 | 532 | 479 |
| Wheatland | 2,400 | 1,923 | 165 | 126 | 557 | 347 | 1,309 | 1,096 | 369 | 354 |
| Yellowstone | 97,300 | 126,106 | 7,936 | 10,456 | 24,383 | 28,134 | 56,961 | 76,914 | 8,020 | 10,602 |
| TOTALS | 148,100 | 180,819 | 11,902 | 14,768 | 36,880 | 39,817 | 111,697 | 108,334 | 14,989 | 17,900 |

SOURCE: Montana Population Projections 1975 - 2000, Division of Research & Information Systems, Montana Department of Community Affairs, Aug. 1977 (Medium Series)

TABLE 10

1975 & 1985 POPULATION PROJECTIONS BY AGE GROUP & COUNTY

EASTERN MONTANA

| COUNTY | TOTAL POP. | | AGE 0 - 4 | | AGE 5 - 17 | | AGE 18 - 64 | | AGE 65 + | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 | 1975 | 1985 |
| Carter | 1,900 | 1,882 | 137 | 142 | 433 | 361 | 1,059 | 1,120 | 271 | 259 |
| Custer | 12,000 | 14,642 | 917 | 1,212 | 2,992 | 3,006 | 6,593 | 8,625 | 1,498 | 1,799 |
| Daniels | 3,100 | 3,143 | 214 | 259 | 729 | 600 | 1,699 | 1,808 | 458 | 476 |
| Dawson | 10,700 | 13,067 | 937 | 1,156 | 2,822 | 2,757 | 5,954 | 7,868 | 987 | 1,286 |
| Fallon | 4,000 | 4,326 | 342 | 390 | 1,049 | 915 | 2,206 | 2,549 | 403 | 472 |
| Garfield | 1,700 | 1,784 | 140 | 139 | 410 | 352 | 982 | 1,072 | 168 | 221 |
| McCone | 2,700 | 2,613 | 211 | 201 | 710 | 532 | 1,488 | 1,552 | 291 | 328 |
| Phillips | 5,400 | 5,757 | 435 | 471 | 1,417 | 1,243 | 2,830 | 3,302 | 718 | 741 |
| Powder River | 2,400 | 2,285 | 207 | 174 | 666 | 499 | 1,331 | 1,406 | 196 | 206 |
| Prairie | 1,900 | 1,915 | 123 | 140 | 408 | 352 | 1,077 | 1,092 | 292 | 331 |
| Richland | 9,900 | 12,093 | 797 | 998 | 2,596 | 2,585 | 5,407 | 7,094 | 1,110 | 1,416 |
| Roosevelt | 10,300 | 11,272 | 1,013 | 1,005 | 2,883 | 2,711 | 5,399 | 6,412 | 1,005 | 1,144 |
| Rosebud | 9,700 | 11,230 | 943 | 931 | 2,680 | 2,809 | 5,168 | 6,531 | 909 | 959 |
| Sheridan | 5,400 | 5,144 | 371 | 382 | 1,383 | 1,011 | 2,931 | 2,946 | 715 | 805 |
| Treasure | 1,200 | 1,236 | 94 | 105 | 318 | 272 | 653 | 721 | 135 | 138 |
| Valley | 13,200 | 16,325 | 1,160 | 1,391 | 3,700 | 3,935 | 7,297 | 9,858 | 1,043 | 1,141 |
| Wibaux | 1,500 | 1,538 | 121 | 135 | 386 | 319 | 806 | 892 | 187 | 192 |
| TOTALS | 97,000 | 110,252 | 8,162 | 9,231 | 25,582 | 24,259 | 52,880 | 64,848 | 10,386 | 11,914 |

SOURCE: Montana Population Projections 1975 - 2000, Division of Research & Information Systems, Montana Department of Community Affairs, Aug. 1977 (Medium Series)

TABLE 11

U.S. CENSUS COUNT OF MONTANA POPULATION, BY RACE AND COUNTY--1970

| | ALL RACES | INDIAN | | OTHER MINORITY | |
|---|---|---|---|---|---|
| | No. | No. | Pct. | No. | Pct. |
| Beaverhead | 8187 | 31 | 0.4 | 18 | 0.2 |
| Big Horn | 10057 | 3917 | 38.9 | 132 | 1.3 |
| Blaine | 6727 | 1562 | 23.2 | 22 | 0.3 |
| Broadwater | 2526 | 22 | 0.9 | 1 | 0.03 |
| Carbon | 7080 | 29 | 0.4 | 29 | 0.4 |
| Carter | 1956 | 3 | 0.2 | 6 | 0.3 |
| Cascade | 81804 | 1509 | 1.8 | 1517 | 1.8 |
| Chouteau | 6473 | 153 | 2.4 | 14 | 0.2 |
| Custer | 12174 | 65 | 0.5 | 58 | 0.5 |
| Daniels | 3083 | 16 | 0.5 | 2 | 0.06 |
| Dawson | 11269 | 50 | 0.4 | 23 | 0.2 |
| Deer Lodge | 15652 | 240 | 1.5 | 188 | 1.2 |
| Fallon | 4050 | 13 | 0.3 | 4 | 0.09 |
| Fergus | 12511 | 65 | 0.5 | 43 | 0.3 |
| Flathead | 39450 | 327 | 0.8 | 147 | 0.4 |
| Gallatin | 32505 | 93 | 0.3 | 203 | 0.6 |
| Garfield | 1796 | 0 | – | 2 | 0.1 |
| Glacier | 10783 | 4576 | 42.4 | 40 | 0.4 |
| Golden Valley | 931 | 1 | 0.1 | 0 | – |
| Granite | 2737 | 20 | 0.7 | 1 | 0.03 |
| Hill | 17358 | 1607 | 9.3 | 154 | 0.9 |
| Jefferson | 5238 | 64 | 1.2 | 23 | 0.4 |
| Judith Basin | 2667 | 7 | 0.3 | 4 | 0.1 |
| Lake | 14445 | 2199 | 15.2 | 44 | 0.3 |
| Lewis and Clark | 33281 | 486 | 1.5 | 169 | 0.5 |
| Liberty | 2359 | 9 | 0.4 | 3 | 0.1 |
| Lincoln | 18063 | 209 | 1.2 | 39 | 0.2 |
| Madison | 2875 | 17 | 0.6 | 1 | 0.03 |
| McCone | 5014 | 78 | 1.6 | 14 | 0.3 |
| Meagher | 2122 | 12 | 0.6 | 13 | 0.6 |
| Mineral | 2958 | 16 | 0.5 | 6 | 0.2 |
| Missoula | 58263 | 660 | 1.1 | 282 | 0.5 |
| Musselshell | 3734 | 2 | 0.05 | 3 | 0.08 |
| Park | 11197 | 32 | 0.3 | 27 | 0.2 |
| Petroleum | 675 | 2 | 0.3 | 0 | – |
| Phillips | 5386 | 258 | 4.8 | 13 | 0.2 |
| Pondera | 6611 | 546 | 8.3 | 10 | 0.2 |
| Powder River | 2862 | 34 | 1.2 | 5 | 0.2 |
| Powell | 6660 | 98 | 1.5 | 23 | 0.3 |
| Prairie | 1752 | 13 | 0.7 | 0 | – |
| Ravalli | 14409 | 142 | 1.0 | 135 | 0.9 |
| Richland | 9837 | 40 | 0.4 | 20 | 0.2 |
| Roosevelt | 10365 | 3110 | 30.0 | 54 | 0.5 |
| Rosebud | 6032 | 1820 | 30.2 | 9 | 0.1 |
| Sanders | 7093 | 384 | 5.4 | 12 | 0.2 |
| Sheridan | 5779 | 42 | 0.7 | 7 | 0.1 |
| Silver Bow | 41983 | 359 | 0.9 | 147 | 0.3 |
| Stillwater | 4632 | 23 | 0.5 | 14 | 0.3 |
| Sweet Grass | 2980 | 2 | 0.06 | 0 | – |
| Teton | 6116 | 45 | 0.7 | 5 | 0.08 |
| Toole | 5839 | 63 | 1.1 | 5 | 0.08 |
| Treasure | 1069 | 1 | 0.09 | 4 | 0.4 |
| Valley | 11471 | 972 | 8.5 | 41 | 0.4 |
| Wheatland | 2529 | 17 | 0.7 | 5 | 0.2 |
| Wibaux | 1465 | 0 | – | 1 | 0.06 |
| Yellowstone | 87367 | 1063 | 1.2 | 539 | 0.6 |
| Yellowstone Nat'l Park | 64 | 0 | -- | 0 | -- |
| TOTAL | 604,409 | 27,130 | 3.9% | 4,281 | 0.6% |

Note: Other minority includes Negro, Japanese, Chinese, Filipino and other races, but does not include Spanish-surnamed or Spanish-speaking Americans.

Source: 1970 U.S. Census

## 3.0 GEOGRAPHICAL DESCRIPTION OF MONTANA

The topography of the State of Montana varies from the mountain crests characteristic of the western third of the state, to the elevated plains, low mountains, and erosion valleys in the central portion, to the flat terrain evident in the east. Montana, by Spanish definition, means mountainous. See Figure 1.

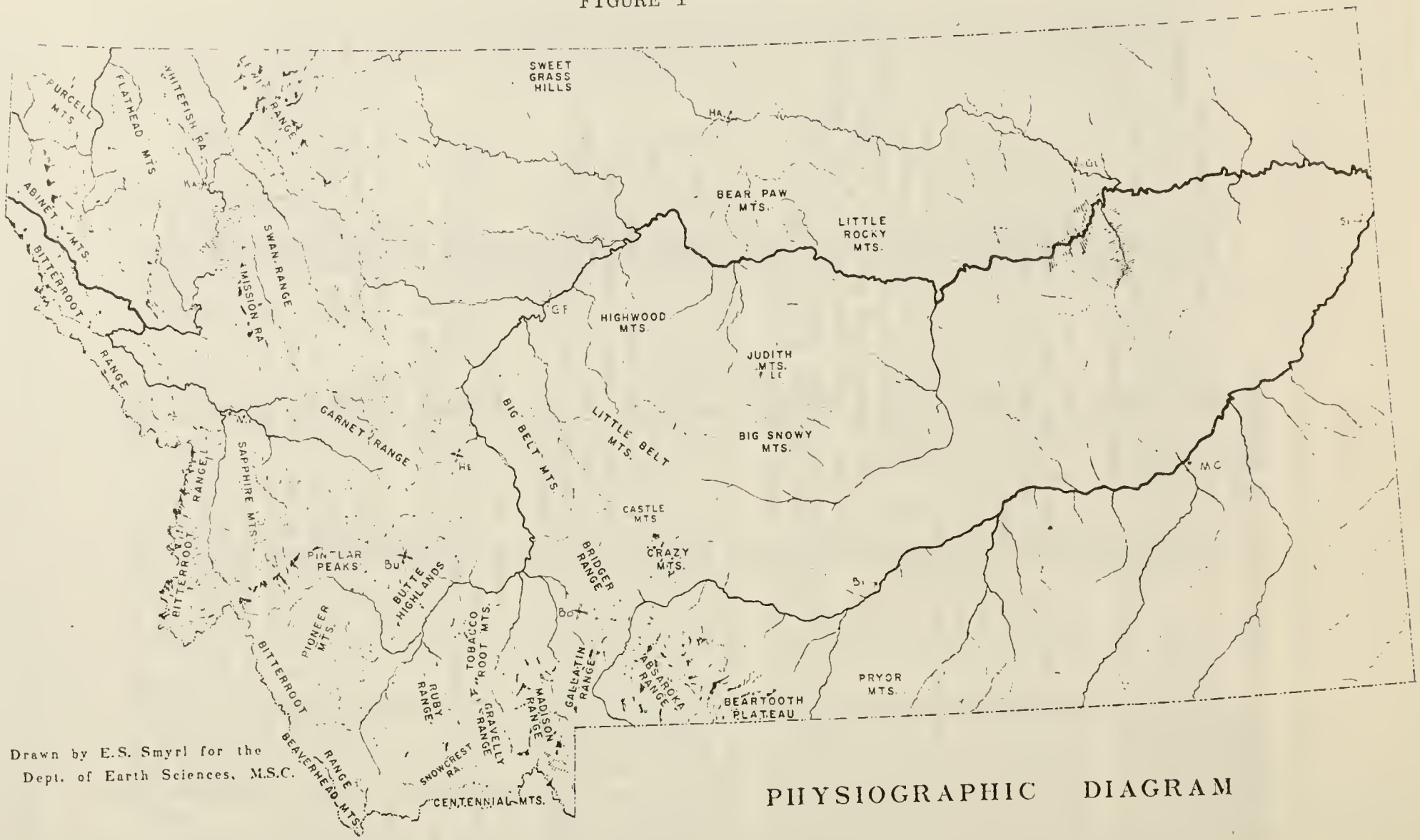
The Northern Rocky Mountain region largely dominates the topography in the western third of the state. Within this boundary and to the north, the mountain ranges and narrow river valleys parallel one another in a northwest-southeast direction. A structural feature running in a north-south direction, the Rocky Mountain trench, harbors Flathead Lake, This lake is one of the largest natural fresh water bodies in the United States. The southern portion of the mountainous area offers a random pattern of mountain ranges with generally wider separating valleys. Both the mountains and the valleys are higher in the south. Therefore, the elevation of the valley floors and mountain tops in the north and south are the same. Highways and railroads throughout western Montana generally follow valley floors and the lowest mountain passes.

Extremes in elevation levels are primarily evident in the western portion of Montana, ranging from 12,799 feet to only 1,800 feet above sea level. Although the mountains in Montana are less subject to earthquake activity than other geologically young and active mountains found in other states, the region has experienced a number of destructive earth tremors. The most recent earthquake occurred in the Madison River region of southwestern Montana in 1959 and caused a considerable amount of local physiographic change.

Within central Montana the topography consists of isolated low mountain groups; the Highwoods, Bearpaws, Little Rickies, Judith, and Big Snowys. In contrast to these mountains are flat or rolling plains surrounding them.

East of a line from the Little Rocky Mountains to the Pryors is a topography dominated by plains. Toward the northeast the elevations drop gradually until at the point where the Missouri River and Yellowstone River exit the state, the elevation is some 2,000 feet above sea level. The rivers in this region generally have narrow flood plains, and some have valleys measuring one hundred to two hundred feet in depth. The "badlands" are scoured landscapes with steep slopes, narrow divides, and closely spaced gullies created by the erosional action of joing rivers. Continental Pleistocene glaciation across the northern portion of the plains, north of the Missouri River, has leveled the landscape.

FIGURE 1




Drawn by E.S. Smyrl for the
Dept. of Earth Sciences, M.S.C.

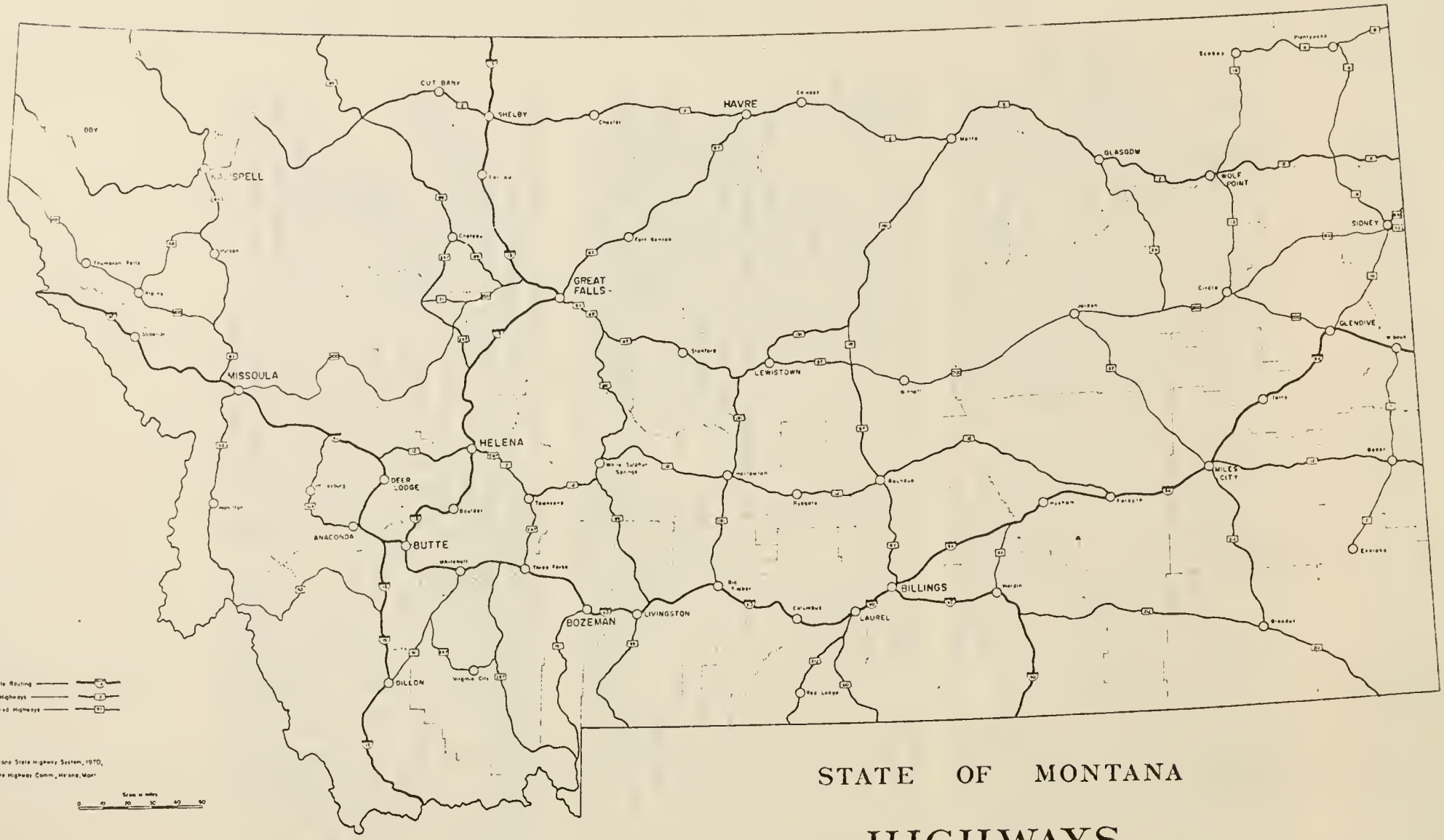
PHYSIOGRAPHIC DIAGRAM

In a state as large and varied in topography as Montana, various climatic controls such as latitude, distance from the ocean, and the presence or absence of mountains, interact in many different ways to contribute to a variety of climatic conditions. The northeast corner of Montana generally is the coldest due to intruding artic air from the north and northeast The movement of artic air into Montana can cause drastic changes in the temperature. In 1916, the temperature at Browning went from 44 degrees F to minus 56 degrees F in a period of twenty four hours, a drop of 100 degrees ($44^{o}$ to $-56^{o}$). The coldest temperature ever recorded in Montana, as well as in forty-eight conterminous states, was $-70^{o}$ near Rodgers Pass in January, 1954. The eastern half of Montana is usually the warmest during the summer months, averaging more than $72^{o}$ F.

The average annual precipitation in Montana ranges from less than twelve inches in the south-central portion of the state to over one hundred inches in the mountains of the west. Overall, the State of Montana receives less than twenty inches of precipitation annually. The extreme western portion of Montana receives more than half of its precipitation in the winter, most of the rest of the state receives at least half of its precipitation during the summer, while northeastern Montana receives nearly eighty-five percent of its precipitation during the growing season. In Montana, county and private roads equal or exceed the improved highways in terms of actual mileage. Highway density is the lowest in north-central and south-eastern Montana. Figure 2 shows the major highway routes in Montana. Montana's railroad network primarily serves east-west transcontinental traffic.

In Montana, the relationship of environmental characteristics and geographical features to the arrangement and delivery of health services becomes extremely important. The varied and harsh topographical and climatic conditions evident in Montana frequently make travel, especially during the winter months, difficult and at times impossible in certain regions. Many roads and highways are closed intermittently during heavy snowfall and blizzard conditions. Air travel too is often restricted during winter months because of poor visibility. Because of the travel restrictions imposed by natural causes, the patterns of utilization of health services are affected. The topographical and climatic conditions relate to travel flow patterns which in turn affect health service delivery patterns.

FIGURE 2




STATE OF MONTANA

# HIGHWAYS

## 4.0 ECONOMIC CHARACTERISTICS

Employment and family income within a health service area are important factors to be considered when studying the utilization rates of health services within a community. While higher income groups typically have utilized health services more frequently than lower income groups, programs that help finance medical care for lower income groups have somewhat removed the "consumption gap". While hospital admissions may be affected by these financing programs, the use of other health care services is largely determined by income. Higher income groups typically use more specialists, more preventive, and more dental services.

The information presented in this section will be updated and consistent comparisons can be made when the Data Management System for the MHSA is fully developed. The information presented is useful for establishing trends and local variations. Information in this Appendix was reported in the Montana State Plan For Health (August, 1974) for percent in labor force, employed persons, and civilian labor force; per capita personal income residence adjusted dollars from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System (unpublished data, 1976); and the U.S. Bureau of the Census, 1970 for occupation information. (Tables 12 and 13).

TABLE 13

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Agriculture, Forestry, and Fisheries | Mining | Construction | Manufacturing |
|---|---|---|---|---|
| North Central | | | | |
| Blaine | 657 | 54 | 131 | 56 |
| Cascade | 1236 | 65 | 1750 | 3221 |
| Chouteau | 1171 | 5 | 92 | 67 |
| Glacier | 411 | 318 | 197 | 89 |
| Hill | 837 | 4 | 236 | 216 |
| Liberty | 325 | 0 | 24 | 12 |
| Pondera | 745 | 21 | 113 | 74 |
| Teton | 790 | 10 | 120 | 87 |
| Toole | 538 | 107 | 60 | 89 |
| South Central | | | | |
| Big Horn | 885 | - | 162 | 317 |
| Carbon | 696 | 22 | 117 | 119 |
| Fergus | 1156 | 5 | 206 | 216 |
| Golden Valley | 199 | 0 | 35 | 0 |
| Judith Basin | 569 | 5 | 46 | 5 |
| Musselshell | 302 | 115 | 83 | 50 |
| Petroleum | 155 | 0 | 17 | 0 |
| Stillwater | 409 | 32 | 125 | 92 |
| Sweet Grass | 491 | - | 97 | 41 |
| Wheatland | 323 | 0 | 20 | 29 |
| Yellowstone | 1410 | 249 | 2230 | 2880 |
| Eastern | | | | |
| Carter | 465 | 0 | 22 | 23 |
| Custer | 614 | 52 | 335 | 120 |
| Daniels | 414 | 0 | 42 | 6 |
| Dawson | 725 | 180 | 255 | 165 |
| Fallon | 319 | 175 | 90 | 21 |
| Garfield | 346 | 6 | 64 | 18 |
| McCone | 488 | - | 20 | 10 |
| Phillips | 727 | 8 | 92 | 36 |
| Powder River | 515 | 169 | 58 | - |
| Prairie | 289 | 0 | 44 | 11 |
| Richland | 747 | 135 | 117 | 258 |
| Roosevelt | 648 | 52 | 202 | 119 |
| Rosebud | 511 | 63 | 117 | 174 |
| Sheridan | 595 | 69 | 103 | 25 |
| Treasure | 167 | 0 | 29 | 6 |
| Valley | 920 | 8 | 260 | 452 |
| Wibaux | 323 | 0 | 20 | 29 |

TABLE 13 (cont.)

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Agriculture, Forestry, and Fisheries | Mining | Construction | Manufacturing |
|---|---|---|---|---|
| Northwestern | | | | |
| Flathead | 15 | 22 | 933 | 2828 |
| Lake | 996 | 22 | 218 | 546 |
| Lincoln | 371 | 198 | 1233 | 1669 |
| Mineral | 64 | 15 | 81 | 259 |
| Missoula | 1140 | 21 | 1289 | 2588 |
| Ravalli | 1182 | 14 | 247 | 632 |
| Sanders | 340 | 0 | 106 | 473 |
| Southwestern | | | | |
| Beaverhead | 792 | 38 | 213 | 144 |
| Broadwater | 274 | 5 | 37 | 93 |
| Deer Lodge | 355 | 179 | 142 | 1788 |
| Gallatin | 1175 | 6 | 696 | 777 |
| Granite | 194 | 36 | 141 | 184 |
| Jefferson | 214 | 88 | 188 | 80 |
| Lewis & Clark | 690 | 83 | 1333 | 813 |
| Madison | 811 | 67 | 142 | 33 |
| Meagher | 296 | 0 | 15 | 158 |
| Park | 543 | 12 | 176 | 213 |
| Powell | 266 | 162 | 73 | 308 |
| Silver Bow | 250 | 2970 | 691 | 921 |

TABLE 13 (cont.)

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Transptn. & Communictn. | Retail Services | Personal Services | Hospitals | Health Servs. Exclud. Hospt. |
|---|---|---|---|---|---|
| North Central | | | | | |
| Blaine | 82 | 408 | 196 | 41 | 68 |
| Cascade | 1734 | 7213 | 3985 | 1117 | 639 |
| Chouteau | 35 | 383 | 159 | 41 | 16 |
| Glacier | 111 | 840 | 323 | 109 | 42 |
| Hill | 816 | 1629 | 643 | 331 | 234 |
| Liberty | 4 | 207 | 57 | 22 | 16 |
| Pondera | 51 | 564 | 249 | 87 | 36 |
| Teton | 47 | 427 | 177 | 39 | 57 |
| Toole | 139 | 401 | 259 | 96 | 17 |
| South Central | | | | | |
| Big Horn | 68 | 608 | 188 | 86 | 86 |
| Carbon | 131 | 560 | 319 | 32 | 54 |
| Fergus | 175 | 1141 | 489 | 152 | 109 |
| Golden Valley | 5 | 38 | 22 | - | - |
| Judith Basin | 17 | 148 | 36 | 6 | - |
| Musselshell | 48 | 305 | 168 | 56 | 29 |
| Petroleum | 0 | 15 | 10 | - | - |
| Stillwater | 71 | 353 | 156 | 52 | 21 |
| Sweet Grass | 54 | 231 | 119 | 20 | 34 |
| Wheatland | 191 | 118 | 140 | 31 | 5 |
| Yellowstone | 2681 | 10503 | 5193 | 1115 | 820 |
| Eastern | | | | | |
| Carter | 10 | 86 | 34 | 24 | 0 |
| Custer | 258 | 1138 | 547 | 352 | 137 |
| Daniels | 22 | 236 | 129 | 60 | 10 |
| Dawson | 543 | 1081 | 531 | 78 | 52 |
| Fallon | 24 | 387 | 171 | 62 | 4 |
| Garfield | 18 | 80 | 64 | 8 | 0 |
| McCone | 24 | 251 | 64 | 14 | 0 |
| Phillips | 15 | 481 | 171 | 58 | 43 |
| Powder River | 23 | 117 | 86 | 0 | 5 |
| Prairie | 24 | 164 | 61 | 45 | 0 |
| Richland | 131 | 1024 | 293 | 85 | 62 |
| Roosevelt | 67 | 799 | 381 | 127 | 54 |
| Rosebud | 116 | 350 | 151 | 70 | 40 |
| Sheridan | 66 | 449 | 249 | 47 | 34 |
| Treasure | 6 | 58 | 26 | 4 | 0 |
| Valley | 245 | 797 | 354 | 138 | 86 |
| Wibaux | 4 | 51 | 51 | 6 | 0 |

TABLE 13 (cont.)

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Transptn. & Communictn. | Retail Services | Personal Services | Hospitals | Health Servs. Exclud. Hospt. |
|---|---|---|---|---|---|
| Northwestern | | | | | |
| Flathead | 774 | 3177 | 1432 | 286 | 318 |
| Lake | 156 | 987 | 498 | 214 | 55 |
| Lincoln | 230 | 996 | 474 | 65 | 35 |
| Mineral | 100 | 164 | 94 | 4 | 17 |
| Missoula | 1498 | 5439 | 2850 | 769 | 491 |
| Ravalli | 145 | 1000 | 539 | 116 | 268 |
| Sanders | 94 | 530 | 215 | 53 | 35 |
| Southwestern | | | | | |
| Beaverhead | 128 | 716 | 322 | 58 | 68 |
| Broadwater | 26 | 171 | 56 | 36 | 16 |
| Deer Lodge | 188 | 567 | 1659 | 847 | 46 |
| Gallatin | 528 | 2665 | 1398 | 242 | 273 |
| Granite | 65 | 84 | 79 | 11 | 0 |
| Jefferson | 44 | 254 | 136 | 19 | 334 |
| Lewis & Clark | 886 | 2902 | 1863 | 724 | 357 |
| Madison | 33 | 251 | 64 | 43 | 41 |
| Meagher | 21 | 103 | 68 | 34 | 4 |
| Park | 853 | 916 | 635 | 63 | 133 |
| Powell | 307 | 338 | 179 | 152 | 21 |
| Silver Bow | 718 | 3896 | 1656 | 821 | 321 |

TABLE 13 (cont.)

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Education | Welfare, Religious & Non-profit Member-ship orgs. | Legal, Engineering & Misc. Profes-sional Servs. | Public Administration |
|---|---|---|---|---|
| North Central | | | | |
| Blaine | 228 | 15 | 25 | 219 |
| Cascade | 2206 | 516 | 600 | 1989 |
| Chouteau | 260 | 27 | 32 | 144 |
| Glacier | 239 | 59 | 60 | 280 |
| Hill | 734 | 95 | 98 | 360 |
| Liberty | 120 | 11 | 0 | 65 |
| Pondera | 214 | 53 | 41 | 164 |
| Teton | 211 | 27 | 30 | 74 |
| Toole | 173 | 14 | 23 | 197 |
| South Central | | | | |
| Big Horn | 365 | 97 | 11 | 290 |
| Carbon | 225 | 13 | 23 | 82 |
| Fergus | 287 | 63 | 47 | 283 |
| Golden Valley | 34 | 10 | 0 | 26 |
| Judith Basin | 87 | 4 | 15 | 52 |
| Musselshell | 78 | 19 | 25 | 55 |
| Stillwater | 113 | 17 | 10 | 78 |
| Sweet Grass | 75 | 10 | 23 | 54 |
| Wheatland | 92 | 21 | 10 | 60 |
| Yellowstone | 3185 | 557 | 838 | 1508 |
| Eastern | | | | |
| Carter | 84 | 6 | 5 | 46 |
| Custer | 324 | 70 | 104 | 380 |
| Daniels | 78 | 18 | 11 | 64 |
| Dawson | 303 | 54 | 94 | 174 |
| Fallon | 111 | 10 | 8 | 71 |
| Garfield | 74 | 6 | 0 | 34 |
| McCone | 1327 | 9 | 16 | 51 |
| Phillips | 156 | 14 | 47 | 97 |
| Powder River | 43 | 0 | 9 | 50 |
| Prairie | 30 | 24 | 0 | 28 |
| Richland | 287 | 44 | 49 | 79 |
| Roosevelt | 303 | 84 | 73 | 287 |
| Rosebud | 258 | 209 | 0 | 179 |
| Sheridan | 148 | 34 | 13 | 111 |
| Treasure | 51 | 0 | 4 | 29 |
| Valley | 381 | 60 | 75 | 260 |
| Wibaux | 30 | 0 | 11 | 83 |

TABLE 13 (cont.)

INDUSTRY OF EMPLOYED PERSONS
AND OCCUPATION OF EXPERIENCED UNEMPLOYED PERSONS
FOR COUNTIES - 1970

| | Education | Welfare, Religious & Non-profit Member-ship. orgs. | Legal, Engineering & Misc. Profes-sional Servs. | Public Administration |
|---|---|---|---|---|
| Northwestern | | | | |
| Flathead | 885 | 10 | 8 | 71 |
| Lake | 426 | 47 | 65 | 277 |
| Lincoln | 415 | 32 | 65 | 224 |
| Mineral | 282 | 10 | 24 | 33 |
| Ravalli | 411 | 93 | 113 | 85 |
| Sanders | 224 | 16 | 13 | 86 |
| Southwestern | | | | |
| Beaverhead | 431 | 15 | 33 | 163 |
| Broadwater | 58 | 25 | 10 | 80 |
| Deer Lodge | 223 | 76 | 23 | 174 |
| Gallatin | 3350 | 192 | 240 | 587 |
| Granite | 68 | 10 | 16 | 60 |
| Jefferson | 196 | 12 | 25 | 98 |
| Lewis & Clark | 1327 | 457 | 465 | 2089 |
| Madison | 114 | 58 | 38 | 71 |
| Meagher | 48 | 10 | 14 | 33 |
| Park | 323 | 74 | 84 | 210 |
| Powell | 151 | 17 | 27 | 331 |
| Silver Bow | 1107 | 324 | 251 | 617 |

TABLE 12

| COUNTY | PER CAPITA PERSONAL INCOME RESIDENCE ADJUSTED DOLLARS | | | | PERCENT IN LABOR FORCE 1970 | | | EMPLOYED PERSONS 1970 | | | CIVILIAN LABOR FORCE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1959 | 1965 | 1970 | 1974 | Female 16 yrs & over | Male 18-24 years | Male 65 yrs & over | % in manufac. indust. | % in white-clr. occupatn. | % governmt. workers | 1970 % unemployed | 1973 % unemployed |
| Northwestern | | | | | | | | | | | | |
| Flathead | 2047 | 2401 | 3181 | 4506 | 33.2 | 72.3 | 14.7 | 23.0 | 43.3 | 15.8 | 9.8 | 6.4 |
| Lake | 1437 | 1961 | 2530 | 3462 | 34.3 | 65.7 | 25.0 | 12.1 | 38.0 | 18.9 | 6.5 | 6.1 |
| Lincoln | 2262 | 2645 | 3129 | 3897 | 30.3 | 85.0 | 21.4 | 27.8 | 34.1 | 15.3 | 10.3 | 9.9 |
| Mineral | 1409 | 2021 | 2788 | 3785 | 43.5 | 73.8 | 14.9 | 24.7 | 35.5 | 31.7 | 13.9 | 5.6 |
| Missoula | 2157 | 2626 | 3324 | 4548 | 42.2 | 54.0 | 22.4 | 12.1 | 52.5 | 24.4 | 7.6 | 5.8 |
| Ravalli | 1719 | 1989 | 2782 | 3369 | 32.6 | 74.0 | 22.8 | 13.0 | 38.8 | 23.0 | 7.9 | 7.7 |
| Sanders | 1702 | 2237 | 2608 | 4020 | 32.1 | 78.7 | 18.1 | 21.6 | 36.3 | 25.4 | 11.9 | 7.3 |
| Southwestern | | | | | | | | | | | | |
| Beaverhead | 2286 | 2239 | 3138 | 4070 | 40.6 | 64.8 | 29.2 | 4.6 | 39.9 | 24.6 | 5.7 | 2.2 |
| Broadwater | 1979 | 2479 | 3110 | 4673 | 35.8 | 84.4 | 15.1 | 10.5 | 44.3 | 18.0 | 3.6 | 4.4 |
| Deer Lodge | 1609 | 2250 | 2997 | 4227 | 34.9 | 74.9 | 8.7 | 33.8 | 27.6 | 28.3 | 7.0 | 6.8 |
| Gallatin | 1896 | 2059 | 3194 | 4622 | 40.4 | 46.5 | 30.2 | 6.4 | 52.6 | 34.5 | 5.4 | 3.3 |
| Granite | 1950 | 2308 | 2533 | 3362 | 26.7 | 57.4 | 20.0 | 19.4 | 27.8 | 21.1 | 5.1 | 4.8 |
| Jefferson | 1706 | 1764 | 2622 | 3226 | 37.3 | 46.8 | 28.3 | 4.7 | 38.3 | 41.6 | 4.5 | 6.2 |
| Lewis & Clark | 2365 | 2878 | 4085 | 5349 | 51.5 | 74.2 | 30.0 | 5.8 | 62.3 | 32.9 | 4.9 | 4.6 |
| Madison | 1978 | 2607 | 3081 | 3102 | 40.0 | 69.5 | 29.2 | 1.7 | 25.1 | 21.0 | 5.7 | 3.2 |
| Meagher | 2336 | 2814 | 3361 | 4242 | 33.6 | 81.7 | 52.8 | 19.7 | 21.1 | 15.7 | 6.7 | 2.4 |
| Park | | | | | 40.1 | 78.5 | 21.4 | 5.0 | 37.7 | 15.0 | 5.6 | 4.2 |
| Powell | 1956 | 2268 | 2973 | 4089 | 38.7 | 58.8 | 20.9 | 13.2 | 34.0 | 28.3 | 4.7 | 5.1 |
| Silver Bow | 2098 | 2756 | 3476 | 4866 | 36.8 | 77.0 | 18.0 | 6.3 | 46.4 | 15.8 | 6.1 | 7.3 |
| North Central | | | | | | | | | | | | |
| Blaine | 1686 | 2035 | 3479 | 5010 | 34.5 | 70.7 | 29.2 | 2.7 | 34.3 | 21.7 | 10.6 | 4.2 |
| Cascade | 2288 | 2638 | 3755 | 4947 | 40.2 | 88.7 | 17.6 | 12.3 | 52.3 | 18.9 | 6.5 | 5.4 |
| Chouteau | 2673 | 3539 | 5443 | 11878 | 29.0 | 81.9 | 48.5 | 2.8 | 30.6 | 18.2 | 1.9 | 2.5 |
| Glacier | 1622 | 1893 | 2893 | 4572 | 37.7 | 66.0 | 21.5 | 2.8 | 44.3 | 26.6 | 12.6 | 6.3 |
| Hill | 2108 | 2412 | 3812 | 6333 | 40.8 | 62.9 | 29.0 | 3.5 | 45.1 | 21.3 | 4.3 | 3.8 |
| Liberty | 3299 | 3009 | 6966 | 8669 | 37.1 | 84.9 | 22.0 | 1.4 | 38.9 | 25.3 | 0.5 | 2.4 |
| Pondera | 1932 | 2598 | 4454 | 6206 | 34.4 | 82.3 | 37.5 | 3.1 | 38.7 | 17.6 | 3.2 | 4.6 |
| Teton | 1950 | 2787 | 4337 | 5406 | 29.5 | 88.8 | 33.1 | 4.2 | 33.0 | 16.7 | 4.2 | 3.4 |
| Toole | 2016 | 2678 | 4922 | 7679 | 35.6 | 76.7 | 31.5 | 4.2 | 41.1 | 22.5 | 3.6 | 3.8 |

TABLE 12 (cont.)

| COUNTY | PER CAPITA PERSONAL INCOME RESIDENCE ADJUSTED DOLLARS | | | | PERCENT IN LABOR FORCE 1970 | | | EMPLOYED PERSONS 1970 | | | CIVILIAN LABOR FORCE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1959 | 1965 | 1970 | 1974 | Female 16 yrs & over | Male 18-24 years | Male 65 yrs & over | % in manufac. indust. | % in whte-clr. occupatn. | % governmt. workers | 1970 % unemployed | 1973 % unemployed |
| South Central | | | | | | | | | | | | |
| Big Horn | 1676 | 1826 | 3132 | 3542 | 31.4 | 75.7 | 32.1 | 10.0 | 38.6 | 29.1 | 4.6 | 6.1 |
| Carbon | 1606 | 1924 | 3472 | 4363 | 30.1 | 67.2 | 16.8 | 5.0 | 36.5 | 16.6 | 5.2 | 4.0 |
| Fergus | 1922 | 2192 | 3452 | 5060 | 36.0 | 85.5 | 22.6 | 5.0 | 42.9 | 17.1 | 4.9 | 3.0 |
| Golden Valley | 1991 | 2341 | 3407 | 3616 | 45.8 | 41.5 | 53.4 | --- | 23.0 | 23.0 | 4.7 | 4.9 |
| Judith Basin | 2279 | 2713 | 4157 | 5801 | 28.4 | 77.8 | 36.7 | 0.5 | 21.5 | 18.8 | 2.8 | 1.8 |
| Musselshell | 1573 | 2170 | 3268 | 3877 | 37.2 | 78.9 | 29.5 | 3.8 | 27.4 | 14.0 | 7.4 | 4.4 |
| Petroleum | 2090 | 2362 | 3729 | 2262 | 26.4 | * | * | --- | 27.2 | 21.8 | --- | 2.1 |
| Stillwater | 1842 | 2188 | 3457 | 4297 | 26.9 | 69.8 | 25.0 | 6.0 | 39.0 | 14.7 | 5.4 | 2.6 |
| Sweet Grass | 1730 | 2211 | 3477 | 3967 | 40.3 | 82.3 | 33.1 | 3.3 | 35.2 | 14.9 | 2.1 | 2.4 |
| Wheatland | 1880 | 2514 | 3613 | 4513 | 38.1 | 75.5 | 50.9 | 2.7 | 35.6 | 16.2 | 1.5 | 2.0 |
| Yellowstone | 2340 | 2669 | 3751 | 5313 | 42.2 | 70.1 | 24.1 | 8.7 | 53.8 | 14.5 | 5.8 | 3.7 |
| Eastern | | | | | | | | | | | | |
| Carter | 2402 | 2703 | 3814 | 4846 | 33.8 | 84.2 | 62.0 | 2.9 | 24.3 | 21.6 | 2.4 | 1.9 |
| Custer | 2003 | 2448 | 3576 | 4588 | 42.2 | 66.3 | 26.1 | 2.7 | 48.7 | 21.9 | 4.7 | 3.6 |
| Daniels | 1509 | 3399 | 4637 | 10259 | 31.9 | 93.3 | 15.8 | 0.6 | 32.8 | 16.4 | 0.4 | 2.4 |
| Dawson | 1553 | 2241 | 3343 | 5692 | 39.1 | 79.5 | 31.7 | 3.9 | 39.7 | 15.1 | 3.1 | 2.8 |
| Fallon | 1667 | 1967 | 3159 | 5061 | 33.9 | 89.0 | 31.4 | 1.4 | 33.8 | 13.6 | 5.4 | 1.9 |
| Garfield | 2138 | 2740 | 3977 | 5218 | 40.3 | 100.0 | 54.8 | 2.5 | 28.7 | 19.4 | 2.3 | 1.5 |
| McCone | 1307 | 2753 | 3356 | 10399 | 27.5 | 81.8 | 50.3 | 1.0 | 31.7 | 15.5 | 2.3 | 2.1 |
| Phillips | 1726 | 2279 | 3963 | 5788 | 38.7 | 81.1 | 18.2 | 1.9 | 34.9 | 19.9 | 4.3 | 3.6 |
| Powder River | 2306 | 2280 | 2989 | 5529 | 38.3 | 78.9 | 38.1 | --- | 23.0 | 9.7 | 2.9 | 2.6 |
| Prairie | 1782 | 2329 | 3083 | 5401 | 34.3 | 92.9 | 38.4 | 1.5 | 27.0 | 18.9 | 1.4 | 1.3 |
| Richland | 1384 | 2008 | 3363 | 5205 | 32.6 | 83.8 | 20.3 | 7.8 | 36.1 | 15.8 | 4.4 | 2.3 |
| Roosevelt | 1179 | 1992 | 3182 | 6331 | 39.2 | 81.7 | 16.7 | 3.7 | 42.7 | 26.8 | 8.8 | 3.7 |
| Rosebud | 1828 | 2278 | 3266 | 3911 | 43.0 | 85.8 | 32.6 | 7.8 | 35.7 | 24.7 | 4.6 | 4.1 |
| Sheridan | 1574 | 2566 | 3477 | 9781 | 25.6 | 67.7 | 25.7 | 1.3 | 27.4 | 15.8 | 3.0 | 1.6 |
| Treasure | 2195 | 3020 | 4371 | 4475 | 35.0 | * | 56.9 | 1.6 | 36.3 | 27.9 | 1.3 | 2.7 |
| Valley | 1531 | 2084 | 3995 | 6172 | 41.7 | 80.9 | 36.0 | 11.2 | 39.3 | 20.7 | 5.1 | 7.3 |
| Wibaux | 1799 | 2570 | 3740 | 5495 | 24.0 | 87.0 | 31.1 | 2.8 | 30.4 | 22.0 | 0.9 | 2.0 |
| Montana Summary | | | | | 38.6 | 69.7 | 24.2 | 9.7 | 45.3 | 20.8 | 6.2 | |

## 5.0 HEALTH STATUS INDICATORS

According to P.L. 93-641, each HSA is required to "assemble and analyze data concerning the status of the health of the residents of its health service area." Particularly important to the Montana Health Systems Agency, Inc. (MHSA) is the development of a Data Management System that defines what health is. The application of health status indicators can then be accomplished "through" the concept of "health" used by the planning agency. Developing this concept of "health" is complicated by two factors.

First, the concept of health should be explicitly defined before it can be measured. Deciding on a definition for health has proved as illusive as an appropriate application of health status indicators in a health planning process. Definitions range from one extreme (non-death) to the other (complete physical, mental and social well-being). The MHSA is presently developing a concept of health that reflects the specific attitudes and attributes of the people of Montana.

Second, a parameter that quantifies the concept of health must be used. That is to say, given accurate data, a valid and reliable measure for health can be used only within the constraints of the "health" definition made. As the MHSA is in the process of developing a definition of "health" for Montana, the health status indicators used will be those indicators of Montana's vital statistics reported by the Bureau of Records and Statistics, Montana State Department of Health and Environmental Sciences.

## 4.1 BIRTHS

The Montana crude birth rate of 16.1 per thousand population, while higher than the record lows set in 1972 and 1973, nonetheless remains below the previous record low set in 1933 (16.4). While the rate for 1910 was only 16.3, this occurred only three years after central registration of births began in Montana and undoubtedly reflects a considerable degree of underreporting. Even though the Montana birth rate is at a low level, it has been higher than the U.S. rate for the past five years. (See Figure 3)

The 1975 natural increase (excess of births over deaths) is 5,531 or 7.4 per thousand population. Table 14 shows the number of live births in Montana in 1975 by place of residence.

In view of the continuing low birth rate for Montana, it is not surprising that there is also a trend toward smaller family size. In 1965, 68.9 percent of children born were first, second, or third living children; in 1975, 89.8 percent of births were in these orders.

FIGURE 3

# CRUDE BIRTH RATES: Montana & U.S., 1933-75

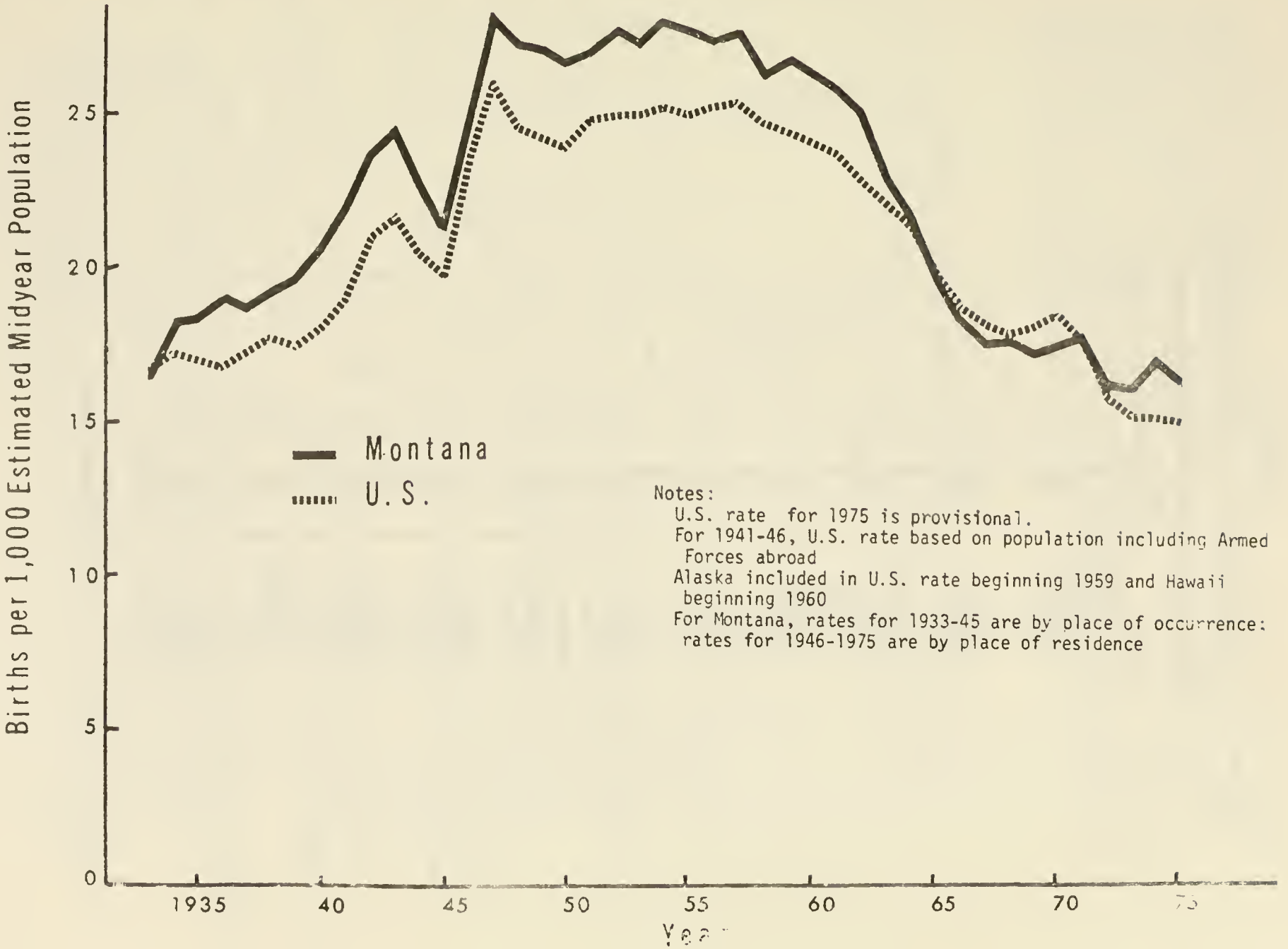


TABLE 14

1975 BIRTHS BY PLACE OF RESIDENCE

| COUNTY | LIVE BIRTHS | | | |
|---|---|---|---|---|
| | TOTAL | WHITE* | INDIAN | OTHER |
| MONTANA, TOTAL | 12,070 | 10,776 | 1,144 | 150 |
| BEAVERHEAD | 110 | 108 | - | 2 |
| BIG HORN | 211 | 77 | 133 | 1 |
| BLAINE | 126 | 77 | 49 | - |
| BROADWATER | 52 | 51 | 1 | - |
| CARBON | 138 | 138 | - | - |
| CARTER | 27 | 27 | - | - |
| CASCADE | 1,513 | 1,357 | 89 | 67 |
| CHOUTEAU | 92 | 90 | 2 | - |
| CUSTER | 227 | 219 | 7 | 1 |
| DANIELS | 59 | 59 | - | - |
| DAWSON | 201 | 200 | - | 1 |
| DEER LODGE | 204 | 197 | 4 | 3 |
| FALLON | 68 | 68 | - | - |
| FERGUS | 157 | 151 | 5 | 1 |
| FLATHEAD | 622 | 602 | 16 | 4 |
| GALLATIN | 501 | 491 | 5 | 5 |
| GARFIELD | 34 | 34 | - | - |
| GLACIER | 253 | 84 | 168 | 1 |
| GOLDEN VALLEY | 16 | 15 | 1 | - |
| GRANITE | 40 | 40 | - | - |
| HILL | 337 | 251 | 82 | 4 |
| JEFFERSON | 83 | 82 | 1 | - |
| JUDITH BASIN | 33 | 33 | - | - |
| LAKE | 319 | 189 | 129 | 1 |
| LEWIS & CLARK | 551 | 521 | 22 | 8 |
| LIBERTI | 42 | 41 | 1 | - |
| LINCOLN | 279 | 275 | 4 | - |
| MCCONE | 60 | 59 | 1 | - |
| MADISON | 64 | 62 | 2 | - |
| MEAGHER | 45 | 45 | - | - |
| MINERAL | 66 | 65 | 1 | - |
| MISSOULA | 1,021 | 971 | 36 | 14 |
| MUSSELSHELL | 60 | 59 | 1 | - |
| PARK | 170 | 168 | 1 | 1 |
| PETROLEUM | 13 | 13 | - | - |
| PHILLIPS | 83 | 74 | 9 | - |
| PONDERA | 104 | 90 | 14 | - |
| POWDER RIVER | 66 | 63 | 3 | - |
| POWELL | 111 | 108 | 3 | - |
| PRAIRIE | 35 | 33 | 2 | - |
| RAVALLI | 234 | 230 | 2 | 2 |
| RICHLAND | 200 | 197 | 2 | 1 |
| ROOSEVELT | 239 | 114 | 124 | 1 |
| ROSEBUD | 233 | 138 | 94 | 1 |
| SANDERS | 143 | 128 | 14 | 1 |
| SHERIDAN | 66 | 65 | - | 1 |
| SILVER BOW | 585 | 574 | 7 | 4 |
| STILLWATER | 58 | 57 | 1 | - |
| SWEET GRASS | 46 | 45 | 1 | - |
| TETON | 82 | 80 | 2 | - |
| TOOLE | 87 | 85 | 2 | - |
| TREASURE | 20 | 19 | - | 1 |
| VALLEY | 239 | 195 | 42 | 2 |
| WHEATLAND | 41 | 41 | - | - |
| WIBAUX | 20 | 20 | - | - |
| YELLOWSTONE | 1,584 | 1,501 | 61 | 22 |

* WHITE INCLUDES MEXICAN.

The continuation of low crude birth rates is also reflected in the increasing median age of mothers at birth. First order births have been augmented because a large cohort of women has entered the prime childbearing age. The fact that median age at birth continues to increase indicates that postponement of births is continuing. Table 15 shows the median age of mothers at their first childbirth, both for total births and out-of-wedlock births for the past five years. Note that the median age for all mothers has been increasing, while that for mothers of children born out-of-wedlock decreased from 1971-1974 and then increased slightly in 1975.

TABLE 15

MEDIAN AGE AT BIRTH: MONTANA, 1971-1975

| Year | Total Births | Out-Of-Wedlock |
|---|---|---|
| 1971 | 23.91 | 20.22 |
| 1972 | 23.95 | 20.10 |
| 1973 | 23.99 | 19.68 |
| 1974 | 24.06 | 19.63 |
| 1975 | 24.21 | 19.76 |

It is quite possible that the statistical data on births for Montana for 1975 reflect changing attitudes and social mores. While both the number of births (12,070) and birth rate (16.1 per thousand population) depict continuing diminution from 1974 (12,273 and 16.7 respectively) both the number and percentage of births occurring out-of-wedlock increased. Although the number of out-of-wedlock births expanded by only 18 (1975 = 1,219; 1974 = 1,201), the proportion of births occurring out-of-wedlock inflated from 9.8% to 10.1%. Much of this percentage increase is, of course, due to the fact that the total number of births decreased. It is interesting that both the number and proportion of out-of-wedlock births continues to swell in view of the fact that legally induced abortions are now more readily available in Montana.

As might be expected, the age distribution for the mothers of out-of-wedlock children is quite different that that for children born in-wedlock. Fifty-three percent of out-of-wedlock births occurred to mothers who were under 20 years of age. Only 17% of total births were in this age bracket.

The sex ratio (Table 16) has been increasing for the last four years. According to a publication of the National Center for Health Statistics, (Natality Statistics Analysis by Lunde, et al) "A higher sex ratio has been associated with younger parents and/or lower birth orders." In spite of the fact that the median age of mothers has been increasing, the proportion of children born in the lower birth orders has also been increasing, and this may account at least in part for the increasing number of males per hundred females.

TABLE 16

SEX RATIO: MONTANA, 1970-1975

| Year | Males per 100 females |
|---|---|
| 1970 | 104.2 |
| 1971 | 106.0 |
| 1972 | 104.3 |
| 1973 | 105.9 |
| 1974 | 107.4 |
| 1975 | 109.1 |

Although the 1970 census showed only 3.9% of Montana's population to be Indian, 9.5% of all births in 1975 were to Indian mothers. Table 17 shows that a higher percentage of Indian births are out-of-wedlock than for other races. This percentage may, however, overstate the sociological consequences of the incidence of out-of-wedlock births among Indians. Paternity affidavits accompanying many of these certificates indicate that the parents of the children have lived together for some time and in some cases the child represents a fairly high birth order within the same family.

TABLE 17

SUMMARY OF INDIAN BIRTHS: MONTANA, 1971-1975

| Year | Percent Indian of Total Births | Percent out-of-wedlock of Indian Total Births | Out-of-Wedlock Median Age | All Indian Births Median Age |
|---|---|---|---|---|
| 1971 | 8.7 | 34.0 | 21.26 | 22.56 |
| 1972 | 8.9 | 33.1 | 20.92 | 22.73 |
| 1973 | 9.3 | 35.9 | 20.21 | 22.13 |
| 1974 | 8.4 | 34.3 | 20.34 | 22.15 |
| 1975 | 9.5 | 37.2 | 20.59 | 22.28 |

## 4.2 DEATHS

Both the number of deaths and death rate were down from 1974. There were 6,539 deaths in 1975, down 13 from 1974. The death rate was 8.7 deaths per thousand population. This is the lowest rate since 1921 (8.6) and is lower than the U.S. rate (9.0).

Figure 4 lists the major causes of death in Montana during 1975; Figure 5 shows the trend in the crude death rates for the four leading causes of death. Table 18 indicates the number, percentage, and rank order of causes of death by age group.

No single cause can be identified as being responsible for the lowering of the rate. The decrease is largely due to an increase in the total population while the number of deaths stayed essentially the same.

## HEART DISEASE

Heart disease was responsible for one-third of all deaths. The number of deaths in this category was 2,178, producing a rate of 291.2 per 100,000 population. In 1974 the rate was 299.6. Both the Montana rate and percent are lower than those for the nation (339.0; 37.8%).

In Montana, ischemic heart disease was responsible for 82.2% of all heart disease. There was a shift in the sex distribution of all deaths from myocardial infarction in 1975. Total deaths increased by 15; however, male deaths decreased by 22, while female deaths increased by 37.

## CANCER

Both the number and cause-specific rates for cancer were also down in 1975. There were 1,105 deaths from cancer; 25 less than 1974. The cause-specific rates were 147.7 in 1975; 153.7 in 1974. The decrease is largely due to a decline in cancer of the digestive and respiratory systems. This decrease was not shared by females, whose lung cancer rate increased.

For men, cancer of the lung caused the most deaths (167); for women, cancer of the breast (85).

Montana's cause-specific death rates for cancer (147.7) are lower than those for the U.S. (174.4).

## STROKE

The mortality from cerebrovascular disease is essentially the same as 1974. In 1975, there were 660 deaths, 10 less than the previous year.

## ACCIDENTS

There were 584 deaths due to accidents, 25 more than 1974 (4.3% increase). As in previous years, deaths from motor vehicle accidents accounted for about half (48.3%) of all accidental deaths. Deaths from fires increased markedly in 1975, 32 versus 17 in 1974. Deaths due to natural and environmental factors also increased: 18 in 1975 compared with 7 in 1974.

## INFLUENZA - PNEUMONIA

There were 202 deaths from these causes, almost the same as in 1974 (201). Montana's cause-specific death rate from influenze and pneumonia (27.0) is the same as that for the nation.

FIGURE 4

# MAJOR CAUSES OF DEATH
## Montana, 1975

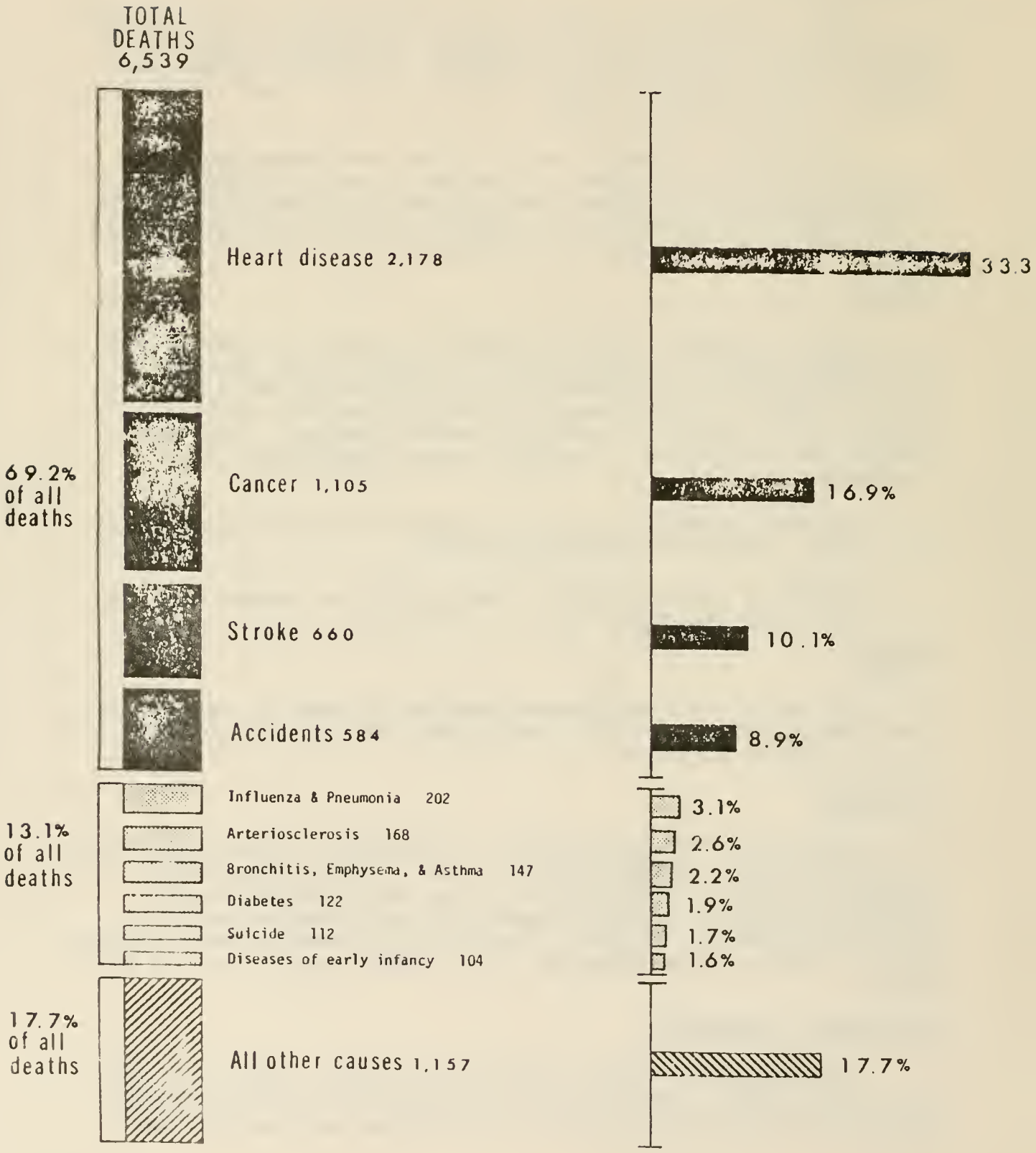
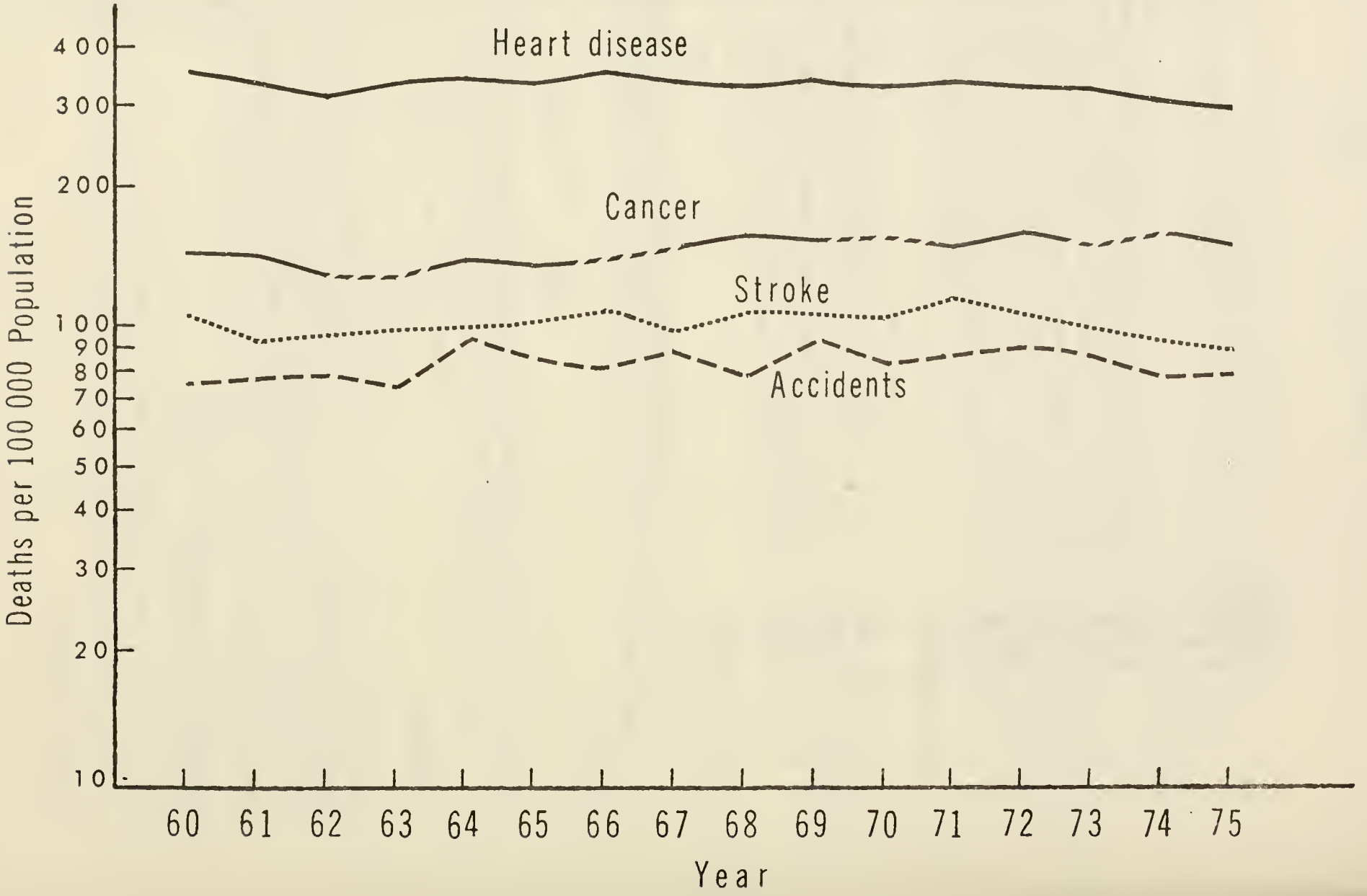


FIGURE 5

# RATES FOR THE FOUR LEADING CAUSES OF DEATH
## Montana, 1960-75




A2-35

| NUMBER OF DEATHS | BIRTH INJURY | DISEASES OF EARLY INFANCY | CONG MALFORM-ATIONS | IMMATURITY | ACCIDENTS NOT MOTOR VEHICLE | MOTOR VEHICLE ACCIDENTS | SUICIDE | HOMOCIDE | MALIGNANT NEOPLASMS | HEART DISEASE | CIRROSIS OF LIVER | CEREBRO VASCULAR DISEASES | BRONCHITIS ENPHYSEMA & ASTHMA | ARTERIOSCHEROSIS | PNEUMONIA | ALL OTHER CAUSES | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Under 1 | 54 | 37 | 31 | 12 | | | | | | | | | | | | 53 | 187 |
| 1-4 | | | 4 | | 13 | 13 | | | | | | | | | | 16 | 46 |
| 5-14 | | | | | 21 | 20 | | | | | | | | | | 28 | 69 |
| 15-24 | | | | | 54 | 98 | 20 | 12 | | | | | | | | 36 | 231 |
| 25-34 | | | | | 28 | 49 | 18 | 10 | 17 | | | | | | | 22 | 144 |
| 35-44 | | | | | 18 | 28 | 11 | | 32 | 29 | 16 | | | | | 53 | 187 |
| 45-54 | | | | | 21 | 19 | 18 | | 131 | 137 | 23 | 20 | | | | 115 | 484 |
| 55-64 | | | | | 43 | | 22 | | 236 | 368 | | 57 | 25 | | | 183 | 907 |
| 65 & Over | | | | | 100 | | | | 674 | 1635 | | 574 | 113 | 166 | 162 | 720 | 4231 |
| PERCENTAGE | | | | | | | | | | | | | | | | | |
| Under 1 | 28.9 | 19.8 | 16.6 | 6.4 | | | | | | | | | | | | 28.3 | 100% |
| 1-4 | | | 8.7 | | 28.3 | 28.3 | | | | | | | | | | 34.8 | 100% |
| 5-14 | | | | | 30.4 | 29.0 | | | | | | | | | | 40.6 | 100% |
| 15-24 | | | | | 23.4 | 42.4 | 8.7 | 5.2 | | | | | | | | 15.6 | 100% |
| 25-34 | | | | | 17.1 | 29.9 | 11.0 | 6.1 | 10.4 | | | | | | | 25.6 | 100% |
| 35-44 | | | | | 9.6 | 15.0 | 5.9 | | 17.1 | 15.5 | 8.6 | | | | | 28.3 | 100% |
| 45-54 | | | | | 4.3 | 3.9 | 3.7 | | 27.1 | 28.3 | 4.8 | 4.1 | | | | 23.8 | 100% |
| 55-64 | | | | | 4.6 | | 2.3 | | 25.1 | 39.1 | | 6.1 | 2.7 | | | 20.1 | 100% |
| 65 & Over | | | | | 2.4 | | | | 15.9 | 38.6 | | 13.6 | 2.7 | 3.9 | 3.8 | 17.0 | 100% |
| RANK ORDER | | | | | | | | | | | | | | | | | |
| Under 1 | 1 | 2 | 3 | 4 | | | | | | | | | | | | | |
| 1-4 | | | 3 | | 1 | 1 | | | | | | | | | | | |
| 5-14 | | | | | 1 | 2 | | | | | | | | | | | |
| 15-24 | | | | | 2 | 1 | 3 | 4 | | | | | | | | | |
| 25-34 | | | | | 2 | 1 | 3 | 5 | 4 | | | | | | | | |
| 35-44 | | | | | 4 | 3 | 6 | | 1 | 2 | 5 | | | | | | |
| 45-54 | | | | | 4 | 6 | 7 | | 2 | 1 | 3 | 5 | | | | | |
| 55-64 | | | | | 4 | | 6 | | 2 | 1 | | 3 | 5 | | | | |
| 65 & Over | | | | | 7 | | | | 2 | 1 | | 3 | 6 | 4 | 5 | | |

TABLE 18
Specific Causes of Death by Age Group, 1975
Montana Vital Statistics
Bureau of Records & Statistics

ARTERIO-SCLEROSIS

There were 168 deaths from arterio-sclerosis (1 less than 1974). Montana's cause-specific rate is 22.5, which is higher than that for the United States (13.7).

BRONCHITIS - EMPHYSEMA - ASTHMA

This group moved from 8th place to 7th place in the leading causes of death. In 1975 there were 147 deaths due to bronchitis, emphysema and asthma compared with 119 the previous year. The major portion of the increase is due to deaths from emphysema, up to 119 from 93. The cause-specific death rate for Montana (19.7) is higher than that for the U.S. (11.9).

DIABETES

This cause moved from 10th place in 1974 to 8th place in 1975. There were 122 deaths from diabetes (103 in 1974). The cause-specific rate for Montana (16.3) is slightly lower than the U.S. rate of 16.8.

SUICIDE

The ranking of suicide moved from 7th place in 1974 to 9th place in 1975 (down from 122 deaths to 112). The cause-specific rate (15.0) is higher than that for the U.S. (12.6).

EARLY INFANCY

The group of causes titled: Certain Causes of Mortality in Early Infancy, dropped from 9th place in 1974, to 10th place in 1975. The number of deaths was about the same, 104 in 1975 compared with 103 in 1974. The cause-specific rate for this group, 13.9, is slightly higher than that for the U.S., 12.8.

INFANT MORTALITY

Infant mortality continued to set new record lows in 1975. There were 187 infant deaths and 12,070 live births, producing an infant death rate of 15.5 per 1,000 live births. This is lower than the provisional U.S. rate of 16.1 and a full point lower than the previous record low of 16.5 in 1974. The neonatal death rate of 10.7 is lower than the provisional U.S. rate of 11.8 and lower than the 1974 rate of 12.5. The post-neonatal mortality rate of 4.8 is slightly higher than the U.S. provisional rate (4.3) and is an increase over the 1974 Montana rate (4.0).

The marked improvement in infant mortality both in Montana and in the nation, is displayed in Table 19:

TABLE 19

INFANT DEATHS BY NUMBER AND RATE FOR SELECTED YEARS: MONTANA AND UNITED STATES

| Year | Montana Infant Deaths | Montana Infant Death Rate | U.S. Infant Death Rate |
|---|---|---|---|
| 1960 | 435 | 24.9 | 26.0 |
| 1970 | 272 | 21.5 | 20.0 |
| 1972 | 225 | 19.7 | 18.5 |
| 1974 | 202 | 16.5 | 16.5 |
| 1975 | 187 | 15.5 | 16.1 |

APPENDIX 3

GLOSSARY

A

A-95 AGENCY - Agency designated to implement the review and comment procedures promulgated by Office of Management and Budget Circular A-95.

ACCEPTABILITY - An assessment of medical care based on preceptions of factors such as cost, quality, outcomes, and personal interactions. See also accessibility and quality.

ACCESSIBILITY - The ability of a consumer to obtain medical care. Geographic, financial, social, ethnic, psychic, and technical factors influence access. See also acceptability and quality.

ACCREDITATION - Recognition by an organization that an institution or individual meets specific predetermined standards.

ACUTE CARE - Medical treatment for a short term or episodic disease

ADMISSION RATE - A measure of institution or facility use indicating the number of persons admitted during a specified time period and standardize to a specific population size.

AFFECTED PARTIES - The person whose proposal is being reviewed, members of the public who are to be served by the proposed new institutional health services; health care facilities and health maintenance organizations located in the health service area in which the service is proposed to be offered or developed; and any agency which establishes rates for health care facilities.

AFFILIATION - An agreement between institutions providing for the referral or transfer of patients, and/or sharing or consultation of services.

ALLIED HEALTH MANPOWER - Trained health care personnel working in conjunction with physicians, dentists, and nurses in the provision of health services. Allied Health Manpower do not engage in independent practice. Also referred to as para medical manpower.

ALLOPATHIC MEDICINE - The medical philosophy ascribed to by the majority of physicians in which treatment of disease is accomplished by medical intervention. See also osteopathic medicine.

AMBULATORY CARE - All health services provided on a walk-in or outpatient basis, in contrast to inpatient care.

ANNUAL IMPLEMENTATION PLAN (AIP) - The "Annual Work Plan" of the Health Systems Agency which indicates those parts of the HSP which will be achieved each year and ways in which the achievement will take place.

[illegible] HEALTH SERVICE DEVELOPMENT FUND - Funds available to Health Systems Agencies in accordance with their HSP to stimulate planning for services and/or facilities identified as priorities in the HSP and AIP. When available, the fund will be allotted by the HSA.

AREAWIDE CHP AGENCY ("B AGENCY") - The regional health planning unit functioning under P.L. 89-749.

AVAILABILITY - Location, specialty, type, and volume of health services available to a consumer, normally related to the demand for services.

AVERAGE DAILY CENSUS - The average number of inpatients within a facility each day for a given time period (usually one year).

AVERAGE LENGTH OF STAY - The average number of inpatient days spent by patients within a facility.

B

BED CAPACITY - The total number of beds which are normally available for inpatient use. This refers to the actual number of beds, based on space intended for use, whether or not beds are actually installed. New-born beds, beds in emergency rooms, anesthesia, recovery rooms, and special diagnostic beds are usually not included.

BED COMPLEMENT - The total number of beds that are normally available in a facility. Beds excluded from the count are the same as those in bed capacity.

BED NEED FORMULA - A mathematical formula predicting the appropriate total number of hospital or long term care beds and the number of hospital or long term care beds by speciality service for a specific population in a specified year.

BLOCK GRANT FINANCING - A consolidation of functional programs into one grant.

BLUE CROSS - An independent non-profit, tax-exempt membership corporation in a specific geographic area providing insurance type protection against hospital costs.

BLUE SHIELD - An independent non-profit, tax-excmpt membership corporation in a specific geographic area providing insurance type protection against surgical and other types of physician services.

BOND - A written promise by the issuer such as a hospital district to repay a sum of borrowed money on a specified date and to pay a set rate of interest on the loan.

BUDGET - A detailed financial plan carrying out a program of activities over a specified period, usually a fiscal year.

[illegible] TURE - An expenditure that is not an expense of operation [illegible] that: 1) exceeds a specified sum, 2) changes bed [illegible], or 3) changes services, or 4) replaces certain equipment.

CAPITATION FEE - A method of payment, in contrast to fee for service, in which a fixed rate is paid per person.

CATASTROPHIC HEALTH INSURANCE - A health insurance plan providing coverage for costs in excess of normal liability.

CATCHMENT AREA - A defined geographic area served by a program (target area).

CATEGORICAL GRANT FINANCING - Grant funding for limited use directed for a specific objective.

CENTER FOR HEALTH PLANNING - Agencies providing technical assistance and training to Health Systems Agencies and State Agencies authorized by P.L. 93-641.

CERTIFICATE OF NEED - The process by which the value of proposed changes in health facilities and services is measured against public need. Such changes may include: construction of new facilities or development of new services, conversion of existing facilities or services and modernization of existing services or facilities. The process of certification of need calls for Review and Comment by the HSA and Approval by the SHPDA.

CERTIFICATION - Recognition that an individual meets predetermined standards for role performance.

CHIROPRACTIC - A system of mechanical therapeutics associating nerve function with health.

CHRONIC CARE - The treatment of chronic disease where long-term treatment is required.

CLINIC - An outpatient facility for diagnosis and treatment.

COINSURANCE - A cost sharing provision in most health insurance policies where the insured is required to pay a percentage of health care cost.

COMMUNITY MENTAL HEALTH CENTER (CMHC) - A facility that provides comprehensive mental health services.

COMPREHENSIVE HEALTH PLANNING (CHP) - The existing system of area-wide health planning agencies and state agencies. Included in this system are 314 (b) Agencies which served locales and 314 (a) Agencies which acted as the agency which coordinated the activities of the 314 (b) Agencies on a statewide basis.

CONDITIONAL DESIGNATION - A limited period (up to 24 months) in which an HSA or SA is required to gear up for and carry out those functions qualified for it under P.L. 93-641.

CONSUMER - Persons who are neither direct or indirect providers of health care and who make up a majority of membership of an HSA Governing Body and the SHCC.

COOPERATIVE HEALTH STATISTICS SYSTEM (CHSS) - A program in which federal, state, and local governments cooperate in collecting health statistics. Statistics will be collected in the areas of health manpower, health facilities, hospital care, household interviews, ambulatory care, long-term care, and vital statistics.

COST - The expenses associated with delivery of health care goods and services.

COST BENEFIT ANALYSIS (CBA) - A procedure in which a program's monetary cost is compared to the program benefits, expressed in dollars, to aid in determining the best investment.

COST EFFECTIVENESS ANALYSIS - Procedure in which a program's costs are calculated and alternate ways are compared for achieving a specific set of results (benefits).

COST CENTER - An accounting procedure where costs are attributed to hospital units such as emergency or radiology rather than to services such as hospital wide nursing or laundry.

COST CONTAINMENT - Formal activity related to the control of health services costs through efforts such as improved efficiency, utilization review, or claims review.

COUNCIL OF GOVERNMENTS (COG) - Multi-jurisdictional cooperative association of local governments to permit a comprehensive approach to problems that affect the region as a whole. COGs are substate regional planning agencies established by states and are responsible for areawide review of projects, development of regional plans, and other special purpose arrangements.

CREDENTIALING - The recognition of acceptability in meeting the standards of registration, certification, or licensure of manpower or facilities.

CRITERIA - Generally acceptable guidelines of performance, upon which recommendations and decisions are based for various review responsibilities.

D

DATA - Detailed information of any kind, usually refers to statistical information.

services that are provided on a business day basis rather than the clock. Day care services include mental health services, rehabilitation, and child care services.

DEBT SERVICE - The principal amount of a loan and the interest on the loan which a borrower agrees to pay with periodic payments over a specified period of time.

DEDUCTIBLE - A provision in health insurance policies where the insured pays a specified minimum loss before the insurer provides coverage.

DENTAL HEALTH SERVICES - All preventive, therapuetic, and education services that pertain to the teeth, oral cavity, and related structures.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE - The federal level executive branch agency charged with the implementation of most federal health programs.

DEPRECIATION - The decline in value of capital assets due to use and/or age.

DESIGNATED PLANNING AGENCY (DPA) - The statewide agency responsible for insuring compliance with Section 1122 of the Social Security Act.

DEVELOPMENTAL DISABILITY - A chronic disability or impairment originating prior to age 18 which is related to intellectual function.

DIRECT COST - A cost identifiable with a specific program activity.

DISABILITY - A limitation of an individual when compared to others of similar age, sex, and occupation. A disability may be physical, mental or social in nature.

DISEASE - A disorder or impairment of the normal state of being.

E

ECONOMIC FEASIBILITY - Evaluation of program's potential for success based on factors such as construction and equipment costs, revenue sources, service costs, and population economic indicators.

EMERGENCY MEDICAL SERVICES (EMS) - Medical, transportation, and technical services that are provided for the treatment of trauma and other types of medical emergencies.

ENVIRONMENTAL HEALTH - Public or private activities involving the external environment, including air and water pollution control, sewage disposal, food and drug surveillance, and institutional sanitation.

EVALUATION - An assessment or examination in which actions and their results are measured against predetermined norms in order to select among alternatives for the future.

EXECUTIVE COMMITTEE - A committee of the Health Systems Agency governing body that has authority to take actions on behalf of the governing body.

EXISTING SERVICE - Those services currently offered or available in a Health Service Area.

EXPERIMENTAL HEALTH SERVICES DELIVERY SYSTEM (EHSDS) - A federal program, currently being phased out, to develop, test and evaluate the organization and operation of coordinated communitywide health services management systems.

EXTENDED CARE FACILITY (ECF) - A skilled nursing facility that lodges patients who need a long term to recover from an illness or operation but do not need to stay in a hospital during that time.

F

FEE FOR SERVICE - The billing system where a patient is charged for each medical encounter in accord with the services provided.

FIDUCIARY INTEREST - A relationship in which an individual or organization has an explicit or implicit obligation to act in behalf of another person's or organization's interests.

FOREIGN MEDICAL GRADUATE (FMG) - A physician trained by a medical school outside of the United States.

FULL DESIGNATION - The status which a HSA or SA must achieve within 24 months that signifies that it is able to carry out all functions mandated for it under P.L. 93-641.

FUND ACCOUNTING - A system of accounting which establishes separate accounts for specific activities.

G

GOAL - A quantified statement of a desired future state or condition.

GOVERNING BODY - A board of directors with an Executive Committee responsible for the organization and performance of an HSA. The qualifications for seating on a governing body are spelled out in Section 1512 (b) (3) (C) of P.L. 93-641.

GRANDFATHER CLAUSE - A provision of law that permits continued status to an entity despite changes in the law that would make them currently ineligible.

GROUP PRACTICE - A formal arrangement between three or more health professionals providing services where resources are combined and shared.

H

HEALTH - Defined by the World Health Organization as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

HEALTH CARE FACILITY - All building units in which health care services are provided.

HEALTH INSURANCE - Indemnity coverage against financial losses associated with the treatment of a health problem.

HEALTH MAINTENANCE ORGANIZATION (HMO) - An organization of health professionals providing comprehensive health services to subscribers on a fixed, periodic prepayment capitation basis.

HEALTH MANPOWER - All individuals employed in health related professions.

HEALTH PLANNING - Planning activities intended to improve the population's health through the coordination and development of health resources.

HEALTH PLANNING CENTER - A center established to serve a region of the Department of HEW by providing technical assistance and training to MSAs and SHPDAs.

HEALTH RESOURCES - Human, monetary, or material resources used in producing health care and health care services.

HEALTH SERVICE AREA - A federally designated geographic region in which effective local planning and development of health services can take place.

HEALTH STATUS - The state of health of an individual or group. Measurement may be accomplished by evaluation of health status indicators.

HEALTH SYSTEMS AGENCY (HSA) - A non-profit, governmental or quasi-governmental entity conditionally or fully designated by the Secretary of HEW to carry out health planning and implementation functions for a Health Service Area.

HEALTH SYSTEMS PLAN (HSP) - A detailed long-range health plan developed by a Health Systems Agency for the geographic area which it serves. This plan deals with a wide range of health care matters and delineates goals and objectives which when achieved, will improve the quality, quantity, availability and accessibility of services to the people in the area. Each HSP is reviewed by the State Health Planning and Development Agency and integrated into a State Health Plan which is approved by the Statewide Health Coordinating Council.

HILL BURTON - A program of federal support for construction and modernization of hospitals and other health facilities. The program has been modified under Title XVI of P.L. 93-641.

HOME HEALTH CARE - Health services rendered to an individual as needed in the home, usually of a nursing skill nature. Provision of home health care may be used in many instances in place of institutionalization.

HOSPITAL - An inpatient facility providing diagnostic, therapeutic, medical, and surgical treatment. Many hospitals also provide outpatient services particularly emergency care.

I

INCIDENCE - An epidemiologic term referring to the number of cases of a disease having their onset during a prescribed period of time in relation to the population unit in which they occur.

INDEMNITY - A contract or assurance by which one person engaged to secure another against losses, e.g., insurance.

INDIRECT COST - A cost which cannot be identified directly with a particular activity, service or product of the program experiencing the cost.

INDIRECT PROVIDER - An individual or organization with a fiduciary or other indirect interest in the delivery of health care services.

INFORMATION SYSTEM - A set of procedures, methods, organization, software, and hardware elements used to file and retrieve information for planning and decision making.

INPATIENT CARE - Treatment of patients who have been admitted overnight or longer to a facility.

INSTITUTIONAL HEALTH SERVICES - Health services provided through health care facilities and health maintenance organizations and includes the entities through which services are provided.

INTERMEDIATE CARE FACILITY (ICF) - A facility providing services to patients who require institutionalization but do not require the degree of sophistication of care provided by a skilled nursing facility.

J

JOINT COMMISSION ON ACCREDITATION OF HOSPITALS (JCAH) - A private non-profit organization that encourages and monitors high standards for institutional medical care.

L

LICENSURE - The process of granting permission to an individual or group to engage in activities otherwise prohibited by law.

LIFE SAFETY CODE - The 1967 Fire Safety Code prepared by the National Fire Protection Association.

LONG-TERM CARE - Health and/or personal care services required by persons who are chronically ill, aged, disabled or retarded in a facility over an extended period.

MAJOR PURCHASERS OF HEALTH CARE - Entities other than providers of health care that provide direct or indirect health care for employees, members, or beneficiaries.

MALPRACTICE - Professional misconduct or lack of ordinary skill in the performance of a professional act.

MATCHING FUNDS - Funds made available to an organization by a supporting agency in a specified percentage that matches a contribution from another agency.

MEDICAID (TITLE XIX) - A federally aided, state operated and administered program which provides medical benefits for certain low income persons in need of health care.

MEDICAL AUDIT - A detailed retrospective review and evaluation of selected medical records by qualified professional staff.

MEDICAL FACILITY - Any outpatient or inpatient medical treatment site.

MEDICALLY UNDERSERVED POPULATION - A population group or area designated as having a shortage of health resources.

MEDICARE (TITLE XVIII) - A national health insurance program for social security recepients. The program, supported by payroll taxes and premiums, provides hospital and supplementary medical insurance.

MODERNIZATION - Health facility and equipment renovation, repair, or replacement.

MONTANA STATUTE - The Montana Certificate of Need Law amending Sections 69-5201 and 69-5212 of R.C.M. 1947.

MORBIDITY - A measure of illness, injury, or disability in a defined population.

MORTALITY - A measure of deaths to a defined population.

N

NATIONAL COUNCIL ON HEALTH PLANNING - A fifteen (15) member advisory council that monitors implementation of P.L. 93-641 and consults on development of national health planning guidelines, and evaluates new medical technology's role in the health system.

NATIONAL HEALTH INSURANCE (NHI) - universal health insurance coverage. Various NHI porposals are being debated by the U.S. Congress

NATIONAL HEALTH PLANNING GUIDELINES - Those guidelines promulgated by the Secretary of HEW which set standards respecting the appropriate supply, distribution and organization of health resources. These guidelines will include a statement of national health planning goals.

NATIONAL HEALTH PRIORITIES - Priorities established by the Congress for health planning as spelled out in P.L. 93-641.

NATIONAL HEALTH SERVICE CORPS - A program that assigns health care personnel to critical manpower shortage areas.

NEED - Refers to a perceived or real requirement to maintain a condition of good health.

NEIGHBORHOOD HEALTH CENTER - A community health service center providing primary health care services to individuals in a specified target area.

NEW SERVICES - Services not previously offered or available in a Health Service Area.

NON-CONFORMING BEDS - Hospital beds that are deficient due to: 1) unsuitable structural frame, 2) fire and safety deficiencies, 3) unsuitable room and environment, or 4) inadequacy of ancillary services.

NON-METROPOLITAN - Areas that are not U.S. Census Bureau Standard Metropolitan Statistical Areas (SMSAs).

NON-PROFIT - A program that is: 1) tax exempt, and 2) returns all monies to its operation rather than payment of dividends to investors.

NURSE - An individual trained and qualified by law to provide nursing services. Categories include Registered Nurse (RN), Licensed Vocation Nurse (LVN), and Licensed Practical Nurse (LPN).

NURSE PRACTITIONER - A registered nurse trained to provide primary care services independently but under the supervision of a physicians.

NURSING HOME - Institutions other than hospitals providing levels of maintenance, personal, and nursing services to individuals unable to care for themselves.

O

OBJECTIVE - A quantified statement of a desired future state that specifies a deadline.

OCCUPANCY - A measure of inpatient facility use calculated by dividing [illegible] days by patient days.

OCCUPATIONAL HEALTH - Efforts relating to the provision of health and safety services in the work place.

OPEN MEETING - A public meeting to allow for community participation policy decision making.

OPERATIONS RESEARCH - The application of scientific and mathematical methods to the study and analysis of complex problems that are not traditionally considered within the field of scientific inquiry.

OSTEOPATHIC MEDICINE - A school of medicine traditionally oriented to the adjustment of the medical organism currently identical to allopathic medicine with the exception of greater use of physical manipulations.

OUTPATIENT HEALTH CARE - Services that are provided to a patient on an ambulatory basis at a health facility without being admitted to that facility.

P

PATIENT ORIGIN STUDY - A study determining the home location of patients of specific health facilities to define catchment or service areas.

PEER REVIEW - The evaluation of health professionals and their performance by their peers. This term related to programs such as Utilization Review and Professional Standards Review Organizations.

PER DIEM RATE - Institutional costs per day of care.

PERFORMANCE STANDARD - Criteria established by the Department of Health, Education, and Welfare to assess health planning and resource development agencies' achievement.

P.L. 93-641 - The numerical designation given to the National Health Planning and Resources Development Act of 1974.

PRELIMINARY STATE HEALTH PLAN - The draft State Health Plan submitted to the SHCC by the SHPDA. This draft may contain recommendations by the SHPDA to modify HSPs.

POLICY - A definite course or method of action selected from alternatives to determine present and future decisions.

POVERTY AREA - A geographic area with a large number of low income families.

REVALANCE - The number of cases of disease present at a particular time and in relation to the size of the population.

PREVENTIVE MEDICINE - Health Services (such as immunization programs or early detection of disease) intended to prevent the occurrance of health problems.

PREPAYMENT - The advance payment for services as in insurance or health maintenance organizations.

PRIMARY CARE - The initial type of care sought for health problems of a general nature.

PRIORITY - Assignment of a perferential rating to something meriting attention among competing alternatives.

PROFESSIONAL STANDARDS REVIEW ORGANIZATION (PSRO) - Organizations established under Federal law to monitor and improve the quality of health services.

PROJECT REVIEW - Review and comment functions carried out by Health Systems Agencies in accordance with Certificate of Need laws and Section 1122, and New Institutional Health Services.

PROPRIETARY - For profit.

PROSPECTIVE REIMBURSEMENTS - Payment of a health program or hospital by a method established in advance of the provision of services. The system is designed to contain cost by setting limits on amounts paid during the future period.

PROVIDER - An individual or organization whose responsibilities involve the provision, administration, teaching, or development of health services, activities, or supplies. The provider may have a direct or indirect interest in the health industry.

PUBLIC ACCOUNTABILITY - The responsibility owed to the general public in the form of public meetings, membership, reports, open records, and declaration of conflict of interest.

PUBLIC HEALTH - The field dealing with the protection and improvement of community health by organized community efforts.

PUBLIC HEARING - A public meeting considering a specific issue in an organized manner allowing for a decision considering all available information and viewpoints.

L C REGIONAL PLANNING COMMISSION - See Council of Governments

Q

QUALITY - The degree or grade of proficiency associated with the provision of services.

. ..AL PROGRAMS (RMP) - Agencies established under the Heart, Stroke legislation to plan for and stimulate the development delivery programs which would satisfy the needs of the area

REGIONAL OFFICE - One of ten decentralized offices of the United States Department of Health, Education and Welfare which conducts the Business of that department for a specified group of states.

REHABILITATION FACILITY - A center providing vocational, social, medical, and educational services to improve impairments due to disease or injury.

REIMBURSEMENT - Payment for services rendered.

REVENUE SHARING - A federal program redistributing tax monies to local governments for the purpose of meeting specific problems including health, environment, public safety, transportation and recreation.

REVIEW AND COMMENT - The non-approval function which allows a health planning organization such as a Health Systems Agency to formally review proposals such as Certificate of Need applications, and as a result of such review to make recommendations which are forwarded to another body and considered by the second body in its approval or disapproval of the project in question.

RULES AND REGULATIONS - Legal specifications promulgated by the Secretary of HEW that expand upon and/or modify the provisions of an Act so that that Act may be implemented.

S

SCREENING - A series of tests to identify individuals with a disease or risk of disease.

SECONDARY CARE - Health services provided by medical specialists to patients who are referred by primary care physicians or are self referred.

SECRETARY - The Secretary of the United States Department of Health, Education, and Welfare.

SECTION 1122 - That section of the Social Security Act which pertains to Certification of Need for changes in facilities or services as they relate to payments from Medicare and Medicaid, Title XI of P.L. 92-603.

SHARED SERVICES - The coordination and sharing of services between two or more facilities to prevent unnecessary duplication.

SKILLED NURSING FACILITY (SNF) - A nursing facility participating in the Medicaid and Medicare programs that meets specified requirements for services, staffing, and safety.

SOCIAL SERVICES - Programs provided by trained personnel to enable a patient, family members or others to deal with the problems affecting the patient social function and well being.

SOLO PRACTICE - The operation of a private practice by one health professiona

SPECIALIST - A health professional who limits his practice to a specific area of competence usually based on specialized training and recognition by a specialty board.

STAFF - Refers to all personnel affiliated with a facility or organization. The term may also be used to refer to a specific subgroup such as medical staff or nursing staff.

STANDARD - A generally accepted measure of quantity or quality.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA) - U.S. census term referring to specific areas based on specific population, metropolitan character, and integration criteria.

STATE ADMINISTRATIVE PROGRAM (SAP) - The state agency program specifying performance within the state for components of P.L. 93-641.

STATE HEALTH PLAN (SHP) - the State's health plan made up of HSPs from each Health Systems Agency as well as modifications suggested by the SHPDA and plans for state-provided services which are also developed by the SHPDA. The final approval of the SHP rests with the SHCC.

STATE HEALTH PLANNING AND DEVELOPMENT AGENCY (SHPDA) OR (SA) - The agency of state government selected by the Governor and approved by the Secretary of the Department of Health, Education and Welfare, which assumes responsibility for health planning for state government and coordination of health plans developed by each Health Systems Agency within its jurisdiction.

STATE MEDICAL FACILITIES PLAN (SMFP) - The state's facilities prioritization plan which identifies projects and their relative importance that can use assistance under Title XVI of the Public Health Service Act for modernization, construction or conversion of facilities.

STATEWIDE HEALTH COORDINATING COUNCIL (SHCC) - A statewide body comprised of the Health Systems Agency within the state as well as other appointments made by the Governor. Among other things, the SHCC approved and adopts State Health Plans and State Medical Facilities Plans. As the SHCC can alter an HSA's Health Systems Plan, it is also in a position of final approval of the HSP.

HSA ADVISORY COUNCILS - Advisory bodies serving areas within a Health Service Area. These councils are permitted by law and may advise the Governing Body of an HSA with respect to the performance of its mandated junctions.

SYSTEMS ANALYSIS - The construction of models to simulate real life and to test effects produced by alterations in constraints or variables which could not be tested in the real world.

T

TASK FORCE - A group of persons with various specialties that is charged with investigating a particular problem and formulating proposals for its solution.

TERTIARY CARE - The most highly developed and specialized health care services; medical subspecialties that are offered in a limited number of sophisticated facilities.

THIRD PARTY PAYER - A private organization or government agency that pays for the health services of recipients.

TITLE XV - That ammendment to the Public Health Service Act dealing with National Health Planning and Development.

TITLE XVI - That ammendment to the Public Health Service Act dealing with Health Resources Development.

TITLE XX - A "residual" category whose services are intended to augment those provided to the aged, youth, the mentally ill, the developmentally disabled, alcoholics, and drug abusers under other legislation.

U

UTILIZATION - Patterns or rates of use of health care services.

V

VITAL STATISTICS - Statistical data reporting health, disease, deaths, births, and marriages.

W PROGRAM - A plan of action or schedule for task completion.

APPENDIX 4

THE HEALTH PLANNING DEVELOPMENT PROCESS

Figure 1 illustrates the method used in developing the Montana Health Systems Plan. This process was jointly developed by the HSA and State Agency (SHPDA). It was submitted to and passed by HSA Governing Board on November 5, 1976. Each component, or set of service guidelines, went through the following steps:

(1) The planning staffs of both the Health Systems Agency and the State Agency (SHPDA) prepared initial drafts of each component after working with selected providers. Each component was written in accordance with the outline presented in Figure 2.

(2) After the initial draft was reviewed by selected parties, the document was revised and prepared for general distribution. Figure 3 indicates the number of people to whom copies of the entire document, as well as summaries, were sent. At the same time, notices of subarea hearings were sent to at least one major newspaper in the state. The subarea meetings were held at least 45 days after this mailing.

In accordance with P.L. 93-641, copies were sent to the following agencies for their review and comment:

- Office of Budget & Program Planning (The State A-95 Agency)
- Medical Assistance Bureau, Department of Social & Rehabilitation Service (Medicaid)
- Montana Hospital Rate Review Commission
- Montana Foundation for Medical Care (PSRO)
- Montana Medical Education & Research Foundation
- Montana Hospital Association and its District Chairmen
- Montana Medical Association and its local presidents
- Montana Nurses' Association and its District Presidents, and
- Montana Nursing Home Association.

Both written and oral comments were solicited.

(3) The subarea hearings were held for two purposes. First, to obtain public comments on each draft and second, to obtain subarea advisory council recommendations. An example of the procedures used in each of these hearings is presented in Figure 4.

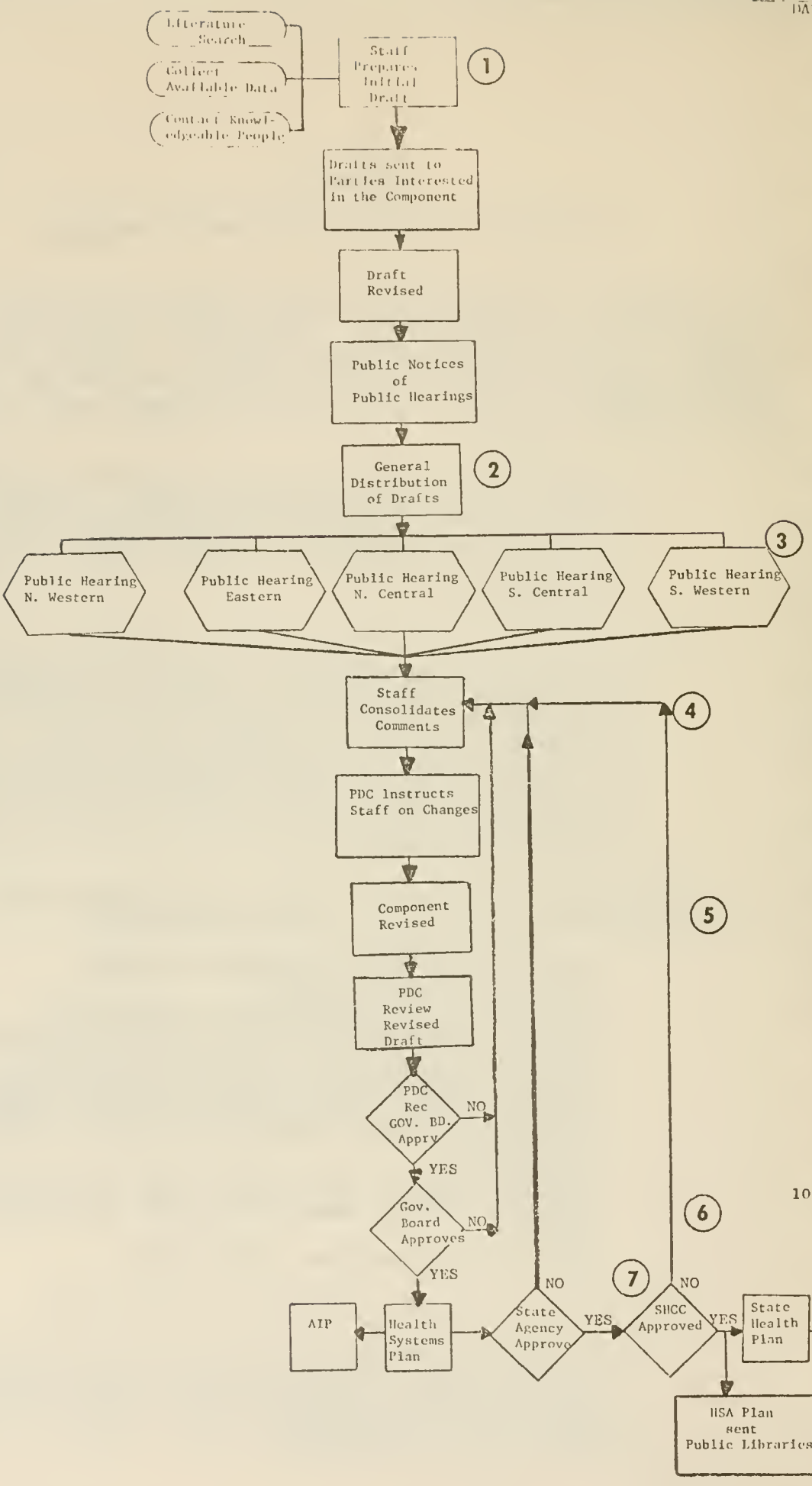



Figure 1
Flow Chart for the Health Systems Plan Development Process

1.0 SERVICE DESCRIPTION

1.1 DEFINITION

A general description of the service being addressed. Emphasis should be place upon the system nationally. How it is delivered in Montana should not be discussed. As a minimum, this section should contain:

- A taxonomy of the service, if one if available
- The medical conditions which are treated by the service
- A general description of the procedures used
- Population primarily affected by the service (if it is not the general population)

1.2 GEOGRAPHIC BOUNDARIES

A definition of the area for which the guidelines apply. The minimum area to be covered is the entire state of Montana. In some cases, facilities located in Montana may serve areas outside the state; in other instances, Montana residents may utilize tertiary services or the system in Montana may include referral centers outside the state.

2.0 BACKGROUND TRENDS

A description of items which could affect the estimated future needs and the recommendation of the guidelines. A history of the development of the service is optional.

2.1 INCIDENCE, PREVALENCE AND MORTALITY

A description of the frequency of the disease over time in the population affected. If available, Montana and/or subarea statistics should be used. Otherwise, use available national statistics.

2.2 SERVICE TRENDS

A discussion of the changes currently occuring in the service being addressed. For example, new procedures and/or equipment may be developing in research, the service may be used for different diseases and the availability of manpower may be increasing/decreasing.

3.0 SERVICE GUIDELINES AND CRITERIA

One sentence statements describing guidelines, criteria and standards toward which the service should strive. If possible, these should be published in the literature and generally accepted by the providers.

3.1 COSTS

E.g. service should be self-supporting, break even point specified.

3.2 AVAILABILITY

E.g. service should be available on a 24-hour basis.

3.3 ACCESSIBILITY

E.g. the service should be available to each population of x people; it should be within a given distance or travel time of the homes of persons using the service; providers should have established referral patterns to more sophisticated facilities; and ability to pay should not be a consideration for the provision of service.



FIGURE 2 - FORMAT OUTLINE FOR HSP SERVICE COMPONENTS (continued)

3.4 CONTINUITY

E.g. primary physician should be kept informed of the patient's progress; the primary physician should follow-up his patient at least annually; patient should see the same physician each time he requires treatment.

3.5 ACCEPTABILITY

E.g. the persons using the service should be treated on a personal basis with respect and dignity.

3.6 QUALITY

E.g. facilities should perform x procedures to maintain proficiency; facilities should have a mortality rate of less than x percent; and type of person delivering the service should be_____

4.0 DESCRIPTION OF THE PRESENT SITUATION

What is happening in Montana

4.1 INVENTORY AND UTILIZATION LEVELS

A description of the facilities; providers and utilization levels in Montana.

4.2 PROBLEMS

Short, one sentence statements of the problems observed in analyzing the inventory and utilization levels of the service.

5.0 ESTIMATE OF SERVICE REQUIREMENTS

A description of the methodology and assumptions used to estimate need of the service. Justification should be presented for each assumption, either by footnote (reference), analysis of available data, or explanation. If possible,



estimated requirements should be numerical and for each subarea as well as the state as a whole. Alternative needs based on different assumptions and methodologies may be discussed.

6.0 GOALS, OBJECTIVES AND RECOMMENDATIONS

One sentence statements of the goals, objectives and recommendations specifying the way the service should develop in the future. Each objective should be compared to the current situation.

The format should highlight what is a goal, short term objective (next year) intermediate term objective (2-5 years) and long term (6-10 years). (Where applicable).



FIGURE 2 - FORMAT OUTLINE FOR HSP SERVICE COMPONENTS (concluded)

# FIGURE 3

## GENERAL DISTRIBUTION OF INITIAL DRAFT COMPONENTS

| | COMPLETE GUIDELINES | | SUMMARIES | |
|---|---|---|---|---|
| TERN | 9 | Plan Development Committee | 11 | All Other Members of Subarea Council |
| | 8 | Hospitals in Counties with no Plan Development Committee member | 17 | All Hospitals |
| | 2 | Subarea Council Members in Counties with neither of the above | 62 | All Physicians |
| | 5 | Rich Eudy | 32 | News Media |
| TOTAL | 24 | | 122 | |
| THCENTRAL | 9 | Plan Development Committee | 9 | All Other Members of Subarea Council |
| | | | 13 | All Hospitals |
| | | | 21 | News Media |
| | | | | Interested Parties |
| | | | 16 | Advisors to Planning Comm. |
| | | | | Health Departments |
| TOTAL | | | | |
| RTHCENTRAL | 9 | Plan Development Committee | 11 | Other Members of Subarea Council |
| | 1 | Health Department (Cascade) | 10 | All Hospitals |
| | | | 22 | News Media |
| | | | 51 | Interested Parties |
| | | | 6 | Health Departments |
| TOTAL | | | | |
| UTHWESTERN | 18 | Subarea Advisory Council | | All Hospitals |
| | | | | News Media |
| | | | | Interested Parties |
| | | | | Health Departments |
| TOTAL | | | | |
| RTHWESTERN | 18 | Subarea Advisory Council | 11 | All Hospitals |
| | 2 | Health Departments (Msla. & Flathead) | 24 | News Media |
| | | | 46 | Interested Parties |
| | | | 4 | Health Departments |
| TOTAL | | | | |
| | 7 | HSA Plan Development Committee Members | 22 | Governing Board Members not on Planning Committee |
| | 1 | A-95 Clearinghouse - Tom Crosser | | |
| | 1 | SRS - Bill Ikard | | |
| | 1 | Rate Review - Jerry Leavitt | | |
| | 2 | Medical Foundation - Dave Coyner, John McMahon, M.D. | | |
| | 1 | MMERF - Sid Pratt, M.D. | | |
| | 1 | Montana Hospital Assn. - Bill Leary | | |
| | 2 | Montana Medical Assn.- Brian Zins & Colvin Agnew, M.D. | | |
| | 1 | Montana Nurses Assn. - Zelda Jacobsen | | |
| | 14 | Presidents of Local Medical Societies | | |
| | 20 | Nurse District Presidents | | |
| | 8 | Hospital District Chairman | | |
| | 1 | Chairman of the HSA Governing Board | | |
| | 1 | Montana Nursing Home Assn. - Rod Gudgel | | |
| | 1 | Nick Kelly | | |
| | 1 | Dr. Knight (SHPDA will send) | | |
| | 50 | Copies for meetings | | |
| TOTAL | | | | |

Meeting Procedures
Public Hearing of Selected
Health Systems Plan/State Health Plan Components

1. Purpose

The Purpose of this joint hearing by the State Health Planning and Development Agency (SHPDA) and the Montana Health Systems Agency, Inc. (MHSA) is to solicit comments concerning the draft guidelines of the following plan components:

- Critical Care Hospital Beds (Intensive and Coronary Care Units)
- Acute Psychiatric Hospital Beds
- Clinical Laboratories
- Diagnostic Imaging (Radiology, Nuclear Medicine and Ultrasound) Facilities

This hearing is required by Public Law 93-641 and regulations developed pursuant to this act prior to the adoption of the Health Systems Plan/State Health Plan by the HSA and SHPDA, respectively. It meets all the requirements specified under the Montana Administrative Procedures Act for uncontested cases.

Public notices of this hearing were published in the following newspapers:

- The Great Falls Tribune (Great Falls)
- The Daily Missoulian (Missoula)
- The Billings Gazette (Billings)
- The Montana Standard (Butte)
- The Glendive Ranger-Review (Glendive)

2. Procedures

All commentors will be recognized by the hearing officer. Before giving your testimony, state your name and organization you represent. Please limit your comments to no more than 5 minutes. Upon completion of your testimony, please hand a written copy (if possible) to the hearing officer.

3. Format

Each set of guidelines will be addressed in the order listed above. The following format will be used for each set of guidelines:

- Staff Presentation
- Comments from the audience
- Comments from the Subarea Advisory Council Committee Members
- Recommendation from the committee (no public discussion allowed)

4. Record of Attendance

All persons attending the hearing will be asked to sign in with name and affillation. The attendance list will be made a part of the minutes of the hearing. A tape recording will be made and retained in the MHSA files for at least one year. Transcripts will not be made unless specifically requested and reasonable charges accepted.

5. Official Action

The hearing panel is not obligated to take any action at the hearing. The purpose of the hearing is to accumulate facts and opinions with regard to the components of the Health Systems Plan/State Health Plan being addressed.

The MHSA Plan Development Committee, after it has had a reasonable time to review the facts and opinions presented at this public hearing, shall instruct the staff how the drafts should be revised. The revised drafts will be submitted to the MHSA Governing Board for adoption into the Health Systems Plan and to the State Health Coordinating Council for adoption into the State Health Plan.

FIGURE 4 - PROCEDURES USED IN SUBAREA HEARINGS

(4) After the five hearings, the planning staff consolidated all of the comments and sent them to the members of the HSA Plan Development Committee. A meeting was held in which each component and the comments received were discussed. The committee then instructed the staff as to which comments should be incorporated into the guidelines and how they should be rewritten.

(5) The staff rewrote the draft and disseminated it to commentors and members of the HSA Plan Development Committee. In the next committee meeting, the draft was refined (if necessary) and approved for consideration by the HSA Governing Board.

(6) At the next meeting of the Governing Board, the drafts were presented for their approval. In one case, this role was delegated to the HSA Executive Committee because of time constraints to compile the Health Systems Plan.

The entire plan with the fifteen components approved by the HSA Governing Board was subjected to a statewide public hearing on January 13, 1978. Drafts were distributed to the parties listed in Figure 2 on December 13, 1977 and public notices of the Hearing were published on December 11.

After the public hearing, the Committee instructed the staff to prepare a list of possible changes to be considered by the HSA Governing Board. This document was reviewed and approved by the HSA Governing Board at their January 28, 1978 meeting.

After the Health Systems Plan has been approved by the HSA Governing Board it will be sent to the State Agency to present to the SHCC at their next meeting. (Step 7) If changes are called for, they will be incorporated into the plan and resubmitted to the HSA Governing Board.

After revisions have been incorporated into the plan, it will be printed and be given general distribution. (Step 8) This will include being sent to public libraries in at least all of the major cities:

. Kalispell
. Missoula
. Butte
. Bozeman
. Helena
. Great Falls
. Lewistown
. Billings
. Havre
. Glasgow
. Miles City

Each component of the HSP will be reviewed and revised annually. At a minimum, the utilization statistics and description of the current situation (Section 4.0) will be updated. If the situation warrants, the guidelines, criteria, and standards (Section 3.0), the estimated service requirements (Section 5.0) and the goals, objectives and recommendations will be changed. When such changes are undertaken, that component will be subjected to the process described above.

APPENDIX 5

HSA COMMITTEES INVOLVED IN DEVELOPING THE HEALTH SYSTEMS PLAN

- HSA Governing Board
- Subarea Advisory Councils
- HSA Plan Development Committee
- HSA Staff
- State Agency (SHPDA) Staff

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Billings Area Indian Health Board
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Native American, Area 3, Consumer

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Prospect and Ames
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Bunger, John
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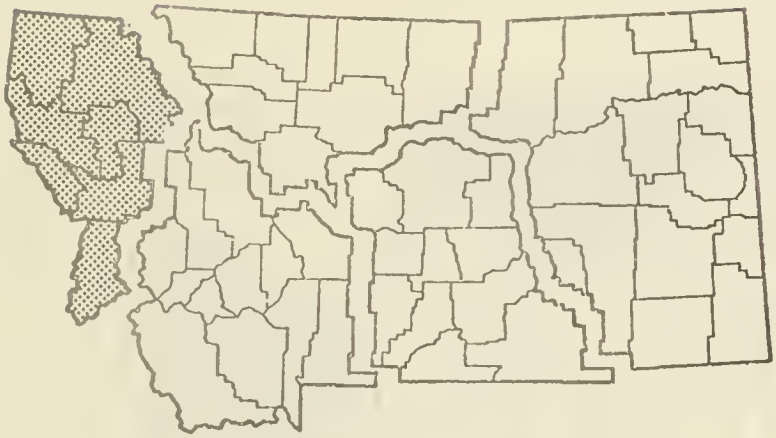
# NORTHWESTERN MONTANA

## Subarea Advisory Council Members



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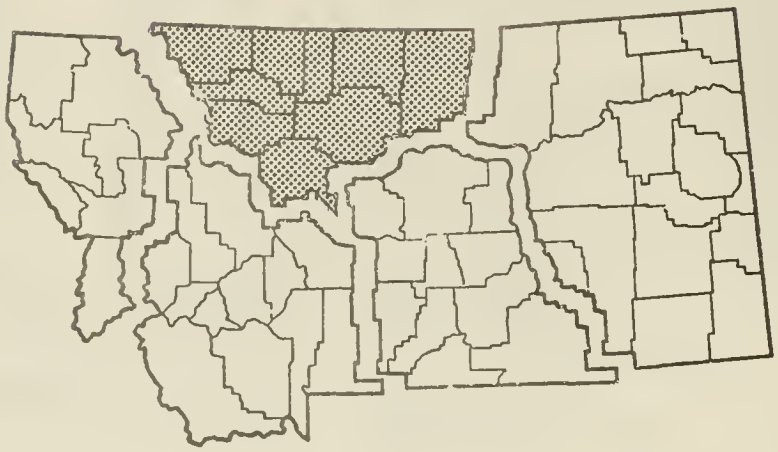
NORTH CENTRAL MONTANA

Subarea Advisory Council Members



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# SOUTHWESTERN MONTANA

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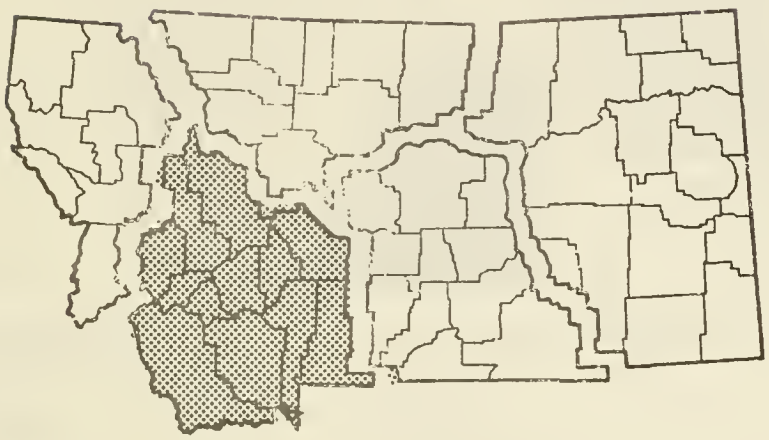

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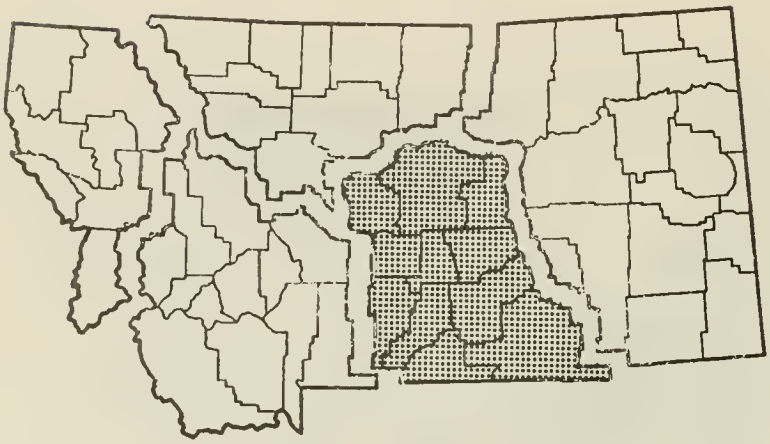
# SOUTH CENTRAL MONTANA

## Subarea Advisory Council Members



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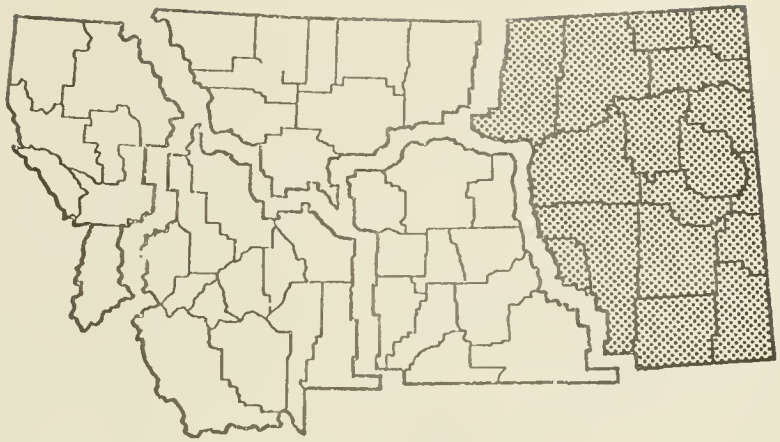
# EASTERN MONTANA

## Subarea Advisory Council Members



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Andrew Hellstern, Hinsdale
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